STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

November 4, 2015

Ms. Jill E. Davis, P.E.
Superintendent
e-copy: jdavis@aub.org
Athens Utilities Board
PO Box 689
Athens, TN 37371

Subject: **Minor Modified NPDES Permit No. TN0024201**
AUB-Oostanaula Creek STP
Athens, McMinn County, Tennessee

Dear Ms. Davis:

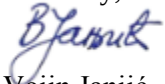
In accordance with the provisions of "The Tennessee Water Quality Control Act" (Tennessee Code Annotated, Sections 69-3-101 through 69-3-120) the above referenced NPDES Permit is hereby minor modified by the Division of Water Resources. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

This minor modification revises the permit issued under cover dated October 28, 2015, and moves the total nitrogen and total phosphorus limiting, monitoring and reporting in the Part 1 Limit Table from a "summer only" section to an "all year" section. Division staff noticed this typographical error when preparing for your new discharge monitoring report (DMR) forms. The division apologize for any inconvenience this has caused.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application. Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment. Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

If you have questions, please contact the Chattanooga Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Wade Murphy at (615) 532-0666 or by E-mail at *Wade.Murphy@tn.gov*.

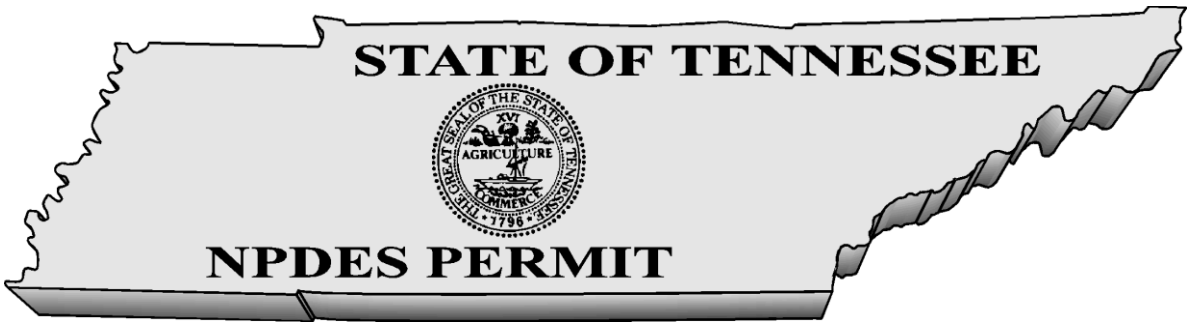
Sincerely,



Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Permit File & Chattanooga Environmental Field Office
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. William J. Meinert, PE, Vice President, O'Brien & Gere, bill.meinert@obg.com
Mr. Daniel G. Coleman, PE, Vice President, O'Brien & Gere, Dan.Coleman@obg.com
Ms. Dana L. Wright, Director of Policy and Legislative Affairs, Tennessee Clean Water Network, dana@tcwn.org
Mr. Craig Brymer, Regulatory Compliance Specialist, Athens Utilities Board, cbrymer@aub.org
Mr. Greg Hayes, Chief Operator, Oostanaula Creek Wastewater Treatment Plant, ghayes@aub.org
Ms. Stephanie A. Durman, General Counsel, Tennessee Clean Water Network, stephanie@tcwn.org
Mr. Sam Saieed, Solid Waste Coordinator/Regional Planner, Southeast TN Development District, ssaieed@sedev.org



No. TN0024201

(minor modified on 11/04/15)
Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**AUB-Oostanaula Creek STP**
is authorized to discharge:	**treated municipal wastewater from Outfall 001**
from a facility located:	**in Athens, McMinn County, Tennessee**
to receiving waters named:	**Oostanaula Creek Mile 30.1**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:	**November 01, 2015**
This permit shall expire on:	**October 31, 2017**
Issuance date:	**October 31, 2015**

for Tisha Calabrese Benton
Director

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WDM
TN0024201PMT.DOC

1.0. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

The City of Athens is authorized to discharge treated municipal wastewater from Outfall 001 to the Oostanaula Creek Mile 30.1. Discharge 001 consists of municipal wastewater from a treatment facility with a design capacity of 6 MGD. Discharge 001 shall be limited and monitored by the permittee as specified below:

Description : External Outfall, Number : 001, Monitoring : Dry Weather, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Overflow use, occurrences	Report	-	occur/ mo	Occurrences	Continuous	Monthly Total

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
E. coli, MTEC-MF	<=	126	#/100mL	Grab	Three Per Week	Monthly Geometric Mean
E. coli, MTEC-MF	<=	941	#/100mL	Grab	Three Per Week	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	64	%	Composite	Annual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales	>=	64	%	Composite	Annual	Minimum
Oxygen, dissolved (DO)	>=	6	mg/L	Grab	Five Per Week	Instantaneous Minimum
Settleable Solids	<=	1	mL/L	Grab	Weekly	Daily Maximum
Total Suspended Solids (TSS)	<=	1501	lb/d	Composite	Weekly	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Weekly	Weekly Average
Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Weekly	Monthly Average
Total Suspended Solids (TSS)	<=	45	mg/L	Composite	Weekly	Daily Maximum
Total Suspended Solids (TSS)	<=	2001	lb/d	Composite	Weekly	Weekly Average
pH	>=	6	SU	Grab	Five Per Week	Minimum
pH	<=	9	SU	Grab	Five Per Week	Maximum

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year (cont)

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Nitrogen, total (as N)	NA	Report	mg/L	Composite	Weekly	Monthly Average
Nitrogen, total (as N)	<=	91323*	lb/yr	Calculated	Monthly	Annual Rolling Load
Phosphorus, total (as P)	NA	Report	mg/l	Composite	Weekly	Monthly Average
Phosphorus, total (as P)	<=	18250*	lb/yr	Calculated	Monthly	Annual Rolling Load
Total Residual Chlorine**	<=	0.03*	mg/L	Grab	Five Per* Week	Daily Maximum

***This annual rolling load value has conditions associated with wastewater plant optimization. See Section 3.7 for an explanation of those conditions. See the notes following the Part 1.1 limit table for additional nutrient limit calculation and reporting requirements.**

****The limit and monitoring and reporting for total residual chlorine apply only if chlorine is used in a wastewater treatment process. If chlorine is not used for disinfecting or any other process, code the discharge monitoring report (DMR), NODI=9.**

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Summer

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
CBOD, 5-day, 20 C	<=	9	mg/L	Composite	Weekly	Weekly Average
CBOD, 5-day, 20 C	<=	350	lb/d	Composite	Weekly	Monthly Average
CBOD, 5-day, 20 C	<=	11	mg/L	Composite	Weekly	Daily Maximum
CBOD, 5-day, 20 C	<=	7	mg/L	Composite	Weekly	Monthly Average
CBOD, 5-day, 20 C	<=	450	lb/d	Composite	Weekly	Weekly Average
Nitrogen, Ammonia total (as N)	<=	1.4	mg/L	Composite	Weekly	Weekly Average
Nitrogen, Ammonia total (as N)	<=	47	lb/d	Composite	Weekly	Monthly Average
Nitrogen, Ammonia total (as N)	<=	.9	mg/L	Composite	Weekly	Monthly Average
Nitrogen, Ammonia total (as N)	<=	1.8	mg/L	Composite	Weekly	Daily Maximum
Nitrogen, Ammonia total (as N)	<=	70	lb/d	Composite	Weekly	Weekly Average

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Winter

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
CBOD, 5-day, 20 C	<=	600	lb/d	Composite	Weekly	Monthly Average
CBOD, 5-day, 20 C	<=	826	lb/d	Composite	Weekly	Weekly Average
CBOD, 5-day, 20 C	<=	16.5	mg/L	Composite	Weekly	Weekly Average
CBOD, 5-day, 20 C	<=	19	mg/L	Composite	Weekly	Daily Maximum
CBOD, 5-day, 20 C	<=	12	mg/L	Composite	Weekly	Monthly Average
Nitrogen, Ammonia total (as N)	<=	150	lb/d	Composite	Weekly	Weekly Average
Nitrogen, Ammonia total (as N)	<=	100	lb/d	Composite	Weekly	Monthly Average
Nitrogen, Ammonia total (as N)	<=	3	mg/L	Composite	Weekly	Weekly Average
Nitrogen, Ammonia total (as N)	<=	4	mg/L	Composite	Weekly	Daily Maximum
Nitrogen, Ammonia total (as N)	<=	2	mg/L	Composite	Weekly	Monthly Average

Description : External Outfall, Number : 001, Monitoring : Percent Removal, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
CBOD, 5-day, 20 C, % removal	>=	40	%	Calculated	Weekly	Daily Minimum
CBOD, 5-day, 20 C, % removal	>=	85	%	Calculated	Weekly	Monthly Average Minimum
TSS, % removal	>=	40	%	Calculated	Weekly	Daily Minimum
TSS, % removal	>=	85	%	Calculated	Weekly	Monthly Average Minimum

Description : External Outfall, Number : 001, Monitoring : Raw Sewage Influent, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Weekly	Daily Maximum
CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Weekly	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Weekly	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Weekly	Monthly Average

Description : External Outfall, Number : 001, Monitoring : Wet Weather, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Bypass of Treatment	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
Overflow use, occurrences	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

See Next Page for Limit Table Notes

Note: The permittee shall report all instances of overflow and/or bypasses. See Part 2.3.3 for the definition of overflow and Part 1.4.5 for reporting requirements.

Note: Unless elsewhere specified, summer months are May through October; winter months are November through April.

Note: See Part 1.3.3 for test procedures. See Part 3.4 for biomonitoring test and reporting requirements. See end of Section 1.1 for percent removal calculations.

Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

Weekly monitoring and reporting for both total nitrogen (TN) and total phosphorus (TP) applies beginning the effective date of the permit. Beginning in April 2016, the 91,323 lb/year TN and 18,250 lb/year (with optimization conditions) TP become the 12-month (annual), rolling load limits (reported on the May 2016 DMR onward). These values equate to the current, summer load limits (lb/d) applied year-round as rolling 12-month loads. The annual rolling (lb/day) is calculated as the average of the loads collected during the twelve month monitoring period beginning from May 2015 and reported on the DMR due the 15th of the following month. Each load is to be calculated from the sample concentration and the average effluent flow rate for the day of the sample. From this point forward the annual load limit will apply monthly on the basis of the samples collecting during the most recent twelve calendar months. See Part 3.7 for how to report excursions of these limits related to optimization upsets.

Calculation Formula:

Annual Rolling Load = ($\sum$ n loads (lb/d) during preceding 12 calendar months ÷ n) x 365 day/year

Where each "n load" = effluent concentration (mg/l) x average effluent flow for sample day (MGD) x 8.34 and

Where "n" = the number of samples collected during the reporting period for which the annual rolling load is being calculated.

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the E. coli group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for E. coli within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an E. coli group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the E. coli group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

For $CBOD_5$ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}}\right] \times 100\% = \%\ \text{removal}$$

The treatment facility will also demonstrate 40% minimum removal of the $CBOD_5$ and TSS based upon each daily composite sample. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}}\right] \times 100\% = \%\ \text{removal}$$

1.2. NUMERIC AND NARRATIVE REUSE – EFFLUENT LIMITATIONS

The City of Athens is authorized to distribute treated municipal wastewater for non-potable reuse from its Oostanaula STP. The reuse water shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	**Effluent Limitations**		**Monitoring Requirements**		
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type	Sampling Point
E.Coli		23 colonies /100 ml (see the following paragraphs)	1/day	grab	See note (1)
Residual Chlorine, Total	1 mg/l (after 30 min.)		1/day or continuous	grab	See note (1) and (2)

(1) Daily *E.coli* and residual chlorine samples should be collected at the point of release from the treatment system. Quarterly *E.coli* and residual chlorine samples should be collected for analysis at two points within the distribution system: one that is representative of the system's average residence time and one that is representative of the system's maximum residence time.

(2) Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

This permit allows the operation of a reuse system inclusive of land application (spray irrigation or drip irrigation) of treated wastewater. The operation should be such that there is no contamination of and no wastewater discharge to any surface or subsurface stream because of collected pools of water called "ponding" or because of improper irrigation. Applications should not be performed when wet or frozen conditions exist at the application sites. Any runoff due to improper operation must be reported in writing to the Division of Water Resources, Environmental Field Office - Chattanooga within 5 days of the incident. In addition, the reuse irrigation system must be operated in a manner preventing the creation of a public health hazard or a public/private nuisance. Additional requirements are found in Section 3.6.

Other conditions associated with discharges authorized in Sections 1.1:

1.3. MONITORING PROCEDURES

1.3.1. Representative Sampling

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters, but must be after all treatment for that parameter or all expected change:

a. The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.

b. Samples for *E. coli* can be collected at any point between disinfection and the actual discharge.

c. The dissolved oxygen can drop in the outfall line; therefore, D.O. measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.

d. Total suspended solids and settleable solids can be collected at any point after the final clarifier.

e. Biomonitoring tests (if required) shall be conducted on final effluent.

1.3.2. Sampling Frequency

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the “No Discharge” block on the Discharge Monitoring Report if there has been any discharge from that

particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then the permittee must sample on that day and report the results of analyses accordingly.

1.3.3. Test Procedures

a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6 degrees Celsius during the compositing period.

d. In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).

e. All sampling for total mercury (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L. The test may be conducted on a single grab sample. The grab sample shall be collected at such time that the treatment plant effluent would be expected to include the most likely sources of mercury in the municipal system.

1.3.4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date and time of sampling;
b. The exact person(s) collecting samples;
c. The dates and times the analyses were performed;
d. The person(s) or laboratory who performed the analyses;
e. The analytical techniques or methods used, and;
f. The results of all required analyses.

1.3.5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation

shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

1.4. REPORTING

1.4.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms supplied by the Division of Water Resources. Submittals shall be postmarked no later than 15 days after the completion of the reporting period. A completed DMR with an original signature shall be submitted to the following address:

TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

A copy of the completed and signed DMR shall be mailed to the Chattanooga Environmental Field Office (EFO) at the following address:

TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES
CHATTANOOGA ENVIRONMENTAL FIELD OFFICE
1301 RIVERFRONT PKWY, SUITE 206
CHATTANOOGA TN 37402

A copy should be retained for the permittee's files. In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit, data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

1.4.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

1.4.3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

1.4.4. Monthly Report of Operation

Monthly operational reports shall be submitted on standard forms to the appropriate Division of Water Resources Environmental Field Office in Jackson, Nashville, Chattanooga, Columbia, Cookeville, Memphis, Johnson City, or Knoxville. Reports shall be submitted by the 15th day of the month following data collection.

1.4.5. Bypass and Overflow Reporting

1.4.5.1. Report Requirements

A summary report of known or suspected instances of overflows in the collection system or bypass of wastewater treatment facilities shall accompany the Discharge Monitoring Report. The report must contain the date and duration of the instances of overflow and/or bypassing and the estimated quantity of wastewater released and/or bypassed.

The report must also detail activities undertaken during the reporting period to (1) determine if overflow is occurring in the collection system, (2) correct those known or suspected overflow points and (3) prevent future or possible overflows and any resulting bypassing at the treatment facility.

On the DMR, the permittee must report the number of sanitary sewer overflows, dry-weather overflows and in-plant bypasses separately. Three lines must be used on the DMR form, one for sanitary sewer overflows, one for dry-weather overflows and one for in-plant bypasses.

1.4.5.2. Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the permittee must notify the division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

1.4.6. Reporting Less Than Detection

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report “BDL” or “NODI =B” on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit. The required detection

levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Resources, Chapter 0400-40-03-.05(8).

For example, if the limit is 0.02 mg/l with a detection level of 0.05 mg/l and detection is shown; 0.05 mg/l must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

1.5 COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.6 REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or

b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

This permit may be reopened and modified, subject to permittee comment and appeal and applicable public notice procedures, to incorporate changes necessary to accommodate watershed planning requirements associated with total maximum daily load (TMDL) development or other pollutant reduction strategy by either the permittee or the State of Tennessee.

2.0. GENERAL PERMIT REQUIREMENTS

2.1 GENERAL PROVISIONS

2.1.1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Resources (the "director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.2. Right of Entry

The permittee shall allow the director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

2.1.3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

2.1.4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology based effluent limitations such as those in State of Tennessee Rule 0400-40-05-.09.

2.1.5. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.8. Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the director, then the permittee shall promptly submit such facts or information.

2.2. CHANGES AFFECTING THE PERMIT

2.2.1. Planned Changes

The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants, which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2.2.2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.

b. The permittee shall furnish to the director, within a reasonable time, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.

c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3 Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

a. The permittee notifies the director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the

requirements of 40 CFR 122.22(a), “Signatories to permit applications”; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

2.2.4. Change of Mailing Address

The permittee shall promptly provide to the director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

2.3. NONCOMPLIANCE

2.3.1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2.3.2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response team).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless the director on a case-by-case basis waives this requirement. The permittee shall provide the director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.3.2.a above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

2.3.3. Overflow

a. "**Overflow**" means any release of sewage from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

b. Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the local TDEC Environmental Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that more than 5 overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources EFO staff to petition for a waiver based on mitigating evidence.

2.3.4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;

ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

iv. The permittee complied with any remedial measures required under "Adverse Impact."

2.3.5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.6. Bypass

a. "***Bypass***" is the intentional diversion of waste streams from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless all of the following 3 conditions are met:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There are no feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventative maintenance;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 2.3.6.b.iii, above.

2.3.7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

2.4. LIABILITIES

2.4.1. Civil and Criminal Liability

Except as provided in permit conditions for "***Bypassing*****,"** "***Overflow,"*** and "***Upset*****,**" nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

3.0. PERMIT SPECIFIC REQUIREMENTS

3.1. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator and the collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

a. The permittee has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with Section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part 63-3-123 through 63-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:

i. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;

ii. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;

iii. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;

iv. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three (3) years;

v. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;

vi. Publish annually, pursuant to 40 CFR 403.8 (f)(2)(viii), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period.

vii. Maintain an adequate revenue structure for continued operation of the pretreatment program.

viii. Update its Industrial Waste Survey at least once every five years.

ix. Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.

b. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific prohibitions. Under no circumstances shall the permittee allow introduction of the following wastes in the waste treatment system:

i. Pollutants which create a fire or explosion hazard in the POTW;

ii. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.

iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system resulting in interference.

iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment works.

v. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.

vi. Any priority pollutant in amounts that will contaminate the treatment works sludge.

vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

ix. Any trucked or hauled pollutants except at discharge points designated by the POTW.

c. The permittee shall notify the Tennessee Division of Water Resources of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:

i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.

ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants.

iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Resources gives final authorization.

d. Reporting Requirements

The permittee shall provide a semiannual report briefly describing the permittee's pretreatment program activities over the previous six-month period. Reporting periods shall end on the last day of the months of March and September. The report shall be submitted to the Division of Water Resources, Central Office and a copy to the appropriate Environmental Field Office no later than the 28th day of the month following each reporting period. For control authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Each report shall conform to the format set forth in the State POTW Pretreatment Semiannual Report Package which contains information regarding:

i. An updated listing of the permittee's industrial users.

ii. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sampling procedures:

Pollutant	**Sample Type**
chromium, trivalent	24-hour composite
chromium, hexavalent	24-hour composite
copper	24-hour composite
lead	24-hour composite
nickel	24-hour composite
zinc	24-hour composite
cadmium	24-hour composite
mercury	per test method
silver	24-hour composite
total phenols	grab
cyanide	grab

If any particular pollutant is analyzed more frequently than is required, the permittee shall report the maximum and average values on the semiannual report. All upsets, interferences, and pass-through violations must also be reported on the semiannual report, the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

chromium III	cyanide	phthalates, sum of the following: bis (2-ethylhexyl) phthalate butyl benzylphthalate di-n-butylphthalate diethyl phthalate
chromium VI	silver	
copper	benzene	
lead	carbon tetrachloride	
nickel	chloroform	
zinc	ethylbenzene	1,2 trans-dichloroethylene
cadmium	methylene chloride	tetrachloroethylene
mercury	naphthalene	toluene
phenols, total	1,1,1 trichloroethane	trichloroethylene

iii. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once per reporting period.

iv. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in 40 CFR 403.8(f)(2)(viii).

v. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are

not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program.

vi. Summary of permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once per year.

3.3 SLUDGE MANAGEMENT PRACTICES

a. The permittee must comply with 40 CFR 503 et seq. Sludge shall be sampled and analyzed at a frequency dependant both on the amount of sludge generated annually and on the disposal practice utilized. Whenever sampling and analysis are required by 40 CFR 503, the permittee shall report to the division the quantitative data for the following parameters:

1)	Arsenic	7)	Nickel
2)	Cadmium	8)	Selenium
3)	Copper	9)	Zinc
4)	Lead	10)	Nitrite plus Nitrate, NO_2, + NO_3 as N
5)	Mercury	11)	Total Kjeldahl Nitrogen, as N
6)	Molybdenum	12)	Ammonia, NH_3, as N

This sludge analysis must be submitted by February 19th of each calendar year. This information shall be submitted to the Division of Water Resources, Central Office, William R. Snodgrass TN Tower, 11th Fl, 312 Rosa L. Parks Ave, Nashville TN 37243, Attention: Sludge Coordinator, Land-Based Systems Unit.

b. Land application of sludge shall halt immediately if any of the following concentrations are exceeded:

POLLUTANT	CONCENTRATION (mg/kg[1])
Arsenic	75
Cadmium	85
Zinc	7500
Copper	4300
Lead	840

POLLUTANT	CONCENTRATION (mg/kg[1])
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100

1 Dry Weight Basis

Monthly average pollutant concentrations shall not exceed Table 3 of 40 CFR §503.13. If they are exceeded cumulative pollutant loading rates are to be calculated and recorded and shall not exceed Table 2 of 40 CFR §503.13 for the life of the land application site.

c. If land application is the final disposition of the wasted sludge, the permittee shall provide pathogen reduction, sludge stabilization and comply with land and crop usage controls as listed in 40 CFR Part 503, as authorized by the Clean Water Act. Records must be maintained by the permittee that indicate compliance or non-compliance with this rule. If the

permittee is required to report to EPA, copies of all reports should be sent to the division, at the address listed in paragraph 1 of this section.

d. Before land applying municipal sludge the permittee must obtain approvals for each site(s) in writing from the division using the latest revision of Guidelines for Land Application or Surface Disposal of Biosolids, unless the sludge being land applied meets the pollutant concentrations of 40 CFR 503.13(b)(3), the Class A pathogen requirements in 40 CFR 503.32(a), and one of the vector attraction reduction requirements in 40 CFR 503.33 (b)(1) through (b)(8).

e. Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.

f. Notice of change in sludge disposal practice: The permittee shall give prior notice to the director of any change planned in the permittee's sludge disposal practice. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals (see table below):

Division of Solid Waste Management			
Office	**Location**	**Zip Code**	**Phone No.**
Chattanooga	1301 Riverfront Pkwy, Suite 206	37402-2013	(423) 634-5745
Jackson	1625 Hollywood Drive	38305	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	38401	(931) 380-3371
Johnson City	2305 Silverdale Road	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	(901) 371-3000
Nashville	711 R.S. Gass Boulevard	37243-1550	(615) 687-7000

Sludge disposal to a municipal solid waste landfill is controlled by the rules of the Tennessee Division of Solid Waste Management (DSWM) and Federal Regulations at 40 CFR 258. If the permittee anticipates changing its disposal practices to either land application or surface disposal, the Division of Water Resources shall be notified prior to the change. A copy of the results of pollutant analyses required by the Tennessee Division of Solid Waste Management (DSWM) and / or 40 CFR 258 shall be submitted to the Division of Water Resources.

Division of Solid Waste Management			
Office	**Location**	**Zip Code**	**Phone No.**
Chattanooga	1301 Riverfront Pkwy, Suite 206	37402-2013	(423) 634-5745
Jackson	1625 Hollywood Drive	38305	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	38401	(931) 380-3371
Johnson City	2305 Silverdale Road	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	(901) 371-3000
Nashville	711 R.S. Gass Boulevard	37243-1550	(615) 687-7000

3.4. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on samples of final effluent from Outfall 001.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC_{25}) of the test organisms. The IC_{25} shall be determined based on a 25% reduction as compared to the controls, and as derived from linear interpolation. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
100% Effluent	**(100+PL)/2**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
100	**82**	**64**	**32**	**16**	**0**

The dilution/control water used will be moderately hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition). A chronic standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report. Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC_{25} is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent collected on days 1, 3 and 5. If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted annually (1/Year) for Outfall 001 and begin no later than 180 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.**

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address (see table below):

Division of Water Resources			
Office	**Location**	**Zip Code**	**Phone No.**
Chattanooga	1301 Riverfront Pkwy, Suite 206	37402-2013	(423) 634-5745
Jackson	1625 Hollywood Drive	38305	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	38401	(931) 380-3371
Johnson City	2305 Silverdale Road	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	(901) 371-3000
Nashville	711 R.S. Gass Boulevard	37243-1550	(615) 687-7000

3.5. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

Permitted CSO or unpermitted bypass/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
AUB-Oostanaula Creek STP
(423) 745-4501
NPDES Permit NO. TN0024201
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Chattanooga

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
AUB-Oostanaula Creek STP
(423) 745-4501
NPDES Permit NO. TN0024201
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Chattanooga

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

3.6 ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled "Tennessee Antidegradation Statement," which prohibits the degradation of high quality surface waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

3.7 PLANT OPTIMIZATION FOR NUTRIENT REDUCTION

Within the ±18 months from the effective date of the permit and the default date when application for permit renewal is due, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater facility to optimize the removal of both nitrogen and phosphorus year-round and submit to TDEC with the application for renewal a report documenting this evaluation and presenting a description of the recommended operational changes. For the purposes of nutrient removal, optimization shall mean methods that maximize removal with the least amount of intentional introduction of chemical compounds into the waste treatment process possible. The methods to be evaluated include, but are not limited to, operational changes that are designed to enhance nitrification and phosphorus removal such as creation of anoxic zones, septage management practices, side stream management or by affecting modifications to processes or operations of its industrial pretreatment waste streams that contain nutrients (including ammonia). The permittee shall seek to implement the changes necessary to reduce loading to 91,323 lb/year total nitrogen and 5,451 lb/year (target only/not limit) total phosphorus as annual rolling averages calculated and reported monthly.

Enforcement Discretion
In order to qualify for enforcement discretion during the optimization period, the permittee shall give the division written notice of when optimization efforts will begin. Notice shall be submitted to water.permits@tn.gov and directed to the attention of the permit writer for NPDES permit # TN0024201. After receipt of that written notification and for the duration of the optimization effort, if optimization activities result in a value or values that cause excursion of the lb/year rolling average, the permittee shall report the lb/year value in the comment section of the discharge monitoring report (DMR), attach the spreadsheet identifying the excursion-causing

values and related calculations, and code the associated parameter as NODI=3 (report attached) on the DMR. This reporting code is not included in the significant non-compliance category of discharge monitoring report review.

Interim Report

The permittee shall provide a brief annual update on progress toward nutrient removal optimization with the Discharge Monitoring Reports submitted for the 12th month of permit effectiveness. This report must summarize activities related to optimizing removal efficiencies and track trends relative to the previous year(s).

Final Report

The permittee shall submit a report to TDEC documenting the evaluation and presenting a recommendation of the operational changes with the application for permit renewal. The report shall be sent to the division's electronic mailbox at water.permits@tn.gov or to the central office permit section at TDEC-Division of Water Resources, Water-Based Systems Unit, William R. Snodgrass TN Tower, 11th Fl, 312 Rosa L. Parks Ave., Nashville, TN 37243. The recommendations will be considered in the development of the next permit terms and conditions. The next permit cycle will include conditions associated with post-optimization chemical and biological sampling of Oostanaula Creek.

Test Methods

Wastewater characterization conducted internally by the permittee for nutrient optimization purposes may deviate from approved methods contained in 40 CFR Part 136. However, effluent characterization conducted for monthly DMR reporting shall use approved methods in 40 CFR Part 136.

4.0. DEFINITIONS AND ACRONYMS

4.1 DEFINITIONS

A "***bypass***" is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A "***calendar day***" is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

A "***composite sample***" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

The "***daily maximum concentration***" is a limitation on the average concentration in units of mass per volume (e.g. milligrams per liter), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

"***Discharge***" or "discharge of a pollutant" refers to the addition of pollutants to waters from a source.

A "***dry weather overflow***" is a type of sanitary sewer overflow and is defined as one day or any portion of a day in which unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharges from more than one point within a 24-hour period shall be counted as separate overflows.

"***Degradation***" means the alteration of the properties of waters by the addition of pollutants or removal of habitat.

"***De Minimis***" - Alterations, other than those resulting in the condition of pollution or new domestic wastewater discharges, that represent either a small magnitude or a short duration shall be considered a de minimis impact and will not be considered degradation for purposes of implementing the antidegradation policy. Discharges other than domestic wastewater will be considered de minimis if they are temporary or use less than five percent of the available assimilative capacity for the substance being discharged. Water withdrawals will be considered de minimis if less than five percent of the 7Q10 flow of the stream is removed (the calculations of the low flow shall take into account existing withdrawals). Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the division finds that the impacts are offset by a combination of impact minimization and/or insystem mitigation.

If more than one activity has been authorized in a segment and the total of the impacts uses no more than ten percent of the assimilative capacity, available habitat, or 7Q10 low flow, they are

presumed to be de minimis. Where total impacts use more than ten percent of the assimilative capacity, available habitat, or 7Q10 low flow they may be treated as de minimis provided that the division finds on a scientific basis that the additional degradation has an insignificant effect on the resource and that no single activity is allowed to consume more than five percent of the assimilative capacity, available habitat or 7Q10 low flow.

An "***ecoregion***" is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The "***geometric mean***" of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A "***grab sample***" is a single influent or effluent sample collected at a particular time.

The "***instantaneous maximum concentration***" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "***instantaneous minimum concentration***" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "***monthly average amount***", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The "***monthly average concentration***", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A "***one week period***" (or "***calendar-week***") is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

"***Pollutant***" means sewage, industrial wastes, or other wastes.

A "***quarter***" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A "***rainfall event***" is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A "***rationale***" (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A "***reference site***" means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A "***reference condition***" is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

A **"*sanitary sewer overflow (SSO)*"** is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall.

"***Sewage***" means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present.

"***Severe property damage***" when used to consider the allowance of a bypass or SSO means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass or SSO. Severe property damage does not mean economic loss caused by delays in production.

"***Sewerage system***" means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

A "***subecoregion***" is a smaller, more homogenous area that has been delineated within an ecoregion.

"***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, "***washout***" is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

"***Waters***" means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

The "***weekly average amount***", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The "***weekly average concentration***", is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

4.2. ACRONYMNS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval

30Q20 – 30-day minimum, 20-year recurrence interval

7Q10 – 7-day minimum, 10-year recurrence interval

BAT – best available technology economically achievable

BCT – best conventional pollutant control technology

BDL – below detection level

BOD_5 – five day biochemical oxygen demand

BPT – best practicable control technology currently available

$CBOD_5$ – five day carbonaceous biochemical oxygen demand

CEI – compliance evaluation inspection

CFR – code of federal regulations

CFS – cubic feet per second

CFU – colony forming units

CIU – categorical industrial user

CSO – combined sewer overflow

DMR – discharge monitoring report

D.O. – dissolved oxygen

E. coli – *Escherichia coli*

EFO – environmental field office

LB(lb) - pound

IC_{25} – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms

IU – industrial user

IWS – industrial waste survey

LC_{50} – acute test causing 50% lethality

MDL – method detection level

MGD – million gallons per day

MG/L(mg/l) – milligrams per liter

ML – minimum level of quantification

ml – milliliter

MLSS – mixed liquor suspended solids

MOR – monthly operating report

NODI – no discharge

NOEC – no observed effect concentration

NPDES – national pollutant discharge elimination system

PL – permit limit

POTW – publicly owned treatment works

RDL – required detection limit

SAR – semi-annual [pretreatment program] report

SIU – significant industrial user

SSO – sanitary sewer overflow

STP – sewage treatment plant

TCA – Tennessee code annotated

TDEC – Tennessee Department of Environment and Conservation

TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation

TMDL – total maximum daily load

TRC – total residual chlorine

TSS – total suspended solids

WQBEL – water quality based effluent limit

ADDENDUM TO RATIONALE AT PERMIT ISSUE

AUB-Oostanaula Creek STP
NPDES PERMIT No. TN0024201
DATE: October 19, 2015
Permit Writer: Wade Murphy

1. ADMINISTRATIVE CHANGES

Name/Address Changes

This permit is revised at issue to reflect the new division director's name, the new address of the division's central office, and the new address of the Chattanooga-Environmental Field Office.

Biosolids

Narrative in Section 3.3 of the permit is revised to include updated language consistent with the state's new biosolids regulation. The Clean Water Act (CWA) requires that any NPDES permit issued to a publicly owned treatment works or any other treatment works treating domestic sewage shall comply with 40 CFR Part 503, the federal regulation governing the use and disposal of sewage sludge. It is important to note that "biosolids" are sewage sludge that has been treated to a level so that they can be land applied.

The language in subpart 3.3 of the permit, relative to biosolids management, a CWA requirement, allows the "permitting authority" under 40 CFR Part 503.9(p) to be able to enforce the provisions of Part 503. The "permitting authority" relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; in the case of Tennessee it is EPA-Region 4.

Tennessee regulates the land application of biosolids under state rules, Chapter 0400-40-15. The state rules became effective on June 30, 2013. Under these state rules, all facilities that land apply biosolids must obtain a biosolids permit from the division. The land application of biosolids under state rules will be regulated through either a general permit or by an individual permit. Questions about the division's biosolids regulations and permitting program should be directed to the division's Biosolids Coordinator at:

State of Tennessee
Department of Environment and Conservation-Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
(615) 532-0625

2. COMMENTS SUMMARY AND RESPONSES

This final permit considered and incorporates revisions based on comment received of the Tennessee Clean Water Network (TWCN), the EPA, and the permittee. The comments concerned permit terms and conditions relative to nutrient limits, a chlorine limit, mercury testing, and whole effluent toxicity test requirements. The final permit reflects revised nutrient terms and conditions, adds a limit on total residual chlorine, and revises the effluent mercury testing requirement. No changes are made to the whole effluent toxicity testing requirements. The nutrient terms and conditions retain a nutrient limit and allow a period for optimization of the biological treatment process. Additional detail regarding the comments on the final permit revisions follow. The nutrient discussion is reserved for last because it is lengthiest.

Whole Effluent Toxicity Testing

Athens requested that whole effluent toxicity testing be required on only the water flea specie, *Ceriodaphnia dubia* rather than both it and the fish specie, *Pimephales promelas.* Their request cited the the belief that water fleas are more sensitive to toxics, so that testing on water fleas alone would be sufficient. The division recognizes this is logical in terms of animal size. However, in order for the test results to have the ability to demonstrate an absence of reasonable potential for toxics in toxic amounts, the test has to measure acute and chronic effects on a specie or species that represent the entire aquatic community. These acute and chronic effects include reproduction and growth as well as lethality. Water fleas alone do not do this. The fleas and fish represent two different biological “families” of aquatic animals. The fleas represent aquatic organisms that are filter feeders while fish represent all fish families, and the reproduction and growth processes of these two families differ. The permit continues to require testing on both species.

The division can, and does, reduce the whole effluent toxicity testing frequency when test results consistently demonstrate absence of reasonable potential. This permit already only imposes whole effluent toxicity testing annually. Because the application for permit renewal requires, at a minimum, annual tests for 4 years, whole effluent toxicity testing is already about as lax as it can be.

Mercury

Athens requested that the permit allow return to use of the less sensitive method (to 0.2 ug/L) for mercury analysis for several related reasons. The more sensitive method requires a grab sample so the current permit requires that a composite be sampled as multiple grabs and then composited at the testing laboratory. Athens points out that the test method with this arrangement requires test blanks for each grab. This increases the labor costs, sample volume and shipping costs and introduces more possibility for error in the test. Athens contends that a 24-hour composite sample is a “better” sample than a single grab and therefore suggests continued testing via a method with the higher detection level. The division cannot concur since such monitoring and reporting would not enable Athens to demonstrate absence of potential to violate the human health water quality standard under worse-case, discharge conditions.

As a compromise, the division revised Section 3.2 of the final permit to require mercury testing on a grab sample. It further amended Section 1.3.3.e to include the narrative requirement, “The test may be conducted on a single grab sample. The grab sample shall be collected at such time that the treatment plant effluent would be expected to include the most likely sources of mercury in the municipal system.” The rationale for the change is that the current, semi-annual,

test frequency is a spot check for mercury anyway. The value in the spot check stems from its being conducted at a regular interval over the permit term and in coordination with what Athens knows about its industrial and commercial sources through implementation of its industrial pretreatment program. These routine interval and knowledge values can be incorporated into grab sampling for mercury and yield the benefit that the more stringent test method will enable Athens to demonstrate absence of reasonable potential.

Total Residual Chlorine

EPA suggested that a chlorine limit be calculated and included in the permit so it would be available in the event that disinfecting is required on an emergency or temporary basis. For this contingency, the division adds a limit on total residual chlorine in Section 1.1 with the qualifier that it applies, and that testing is only required, if chlorine is used in the treatment process. The chlorine limit is calculated as follows:

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.019\ (6.0 + 3.6)}{6.0} = 0.03 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
6.0	=	Qd, design flow of STP (MGD)
3.6	=	Qs, 7Q10 flow of receiving stream (MGD)

Nutrients

Interested parties suggested conflicting changes to the nutrient terms and conditions. The EPA asked for clarification regarding whether the permit is consistent with Tennessee's Nutrient Reduction Strategy. The Tennessee Clean Water Network requested that a water-quality based effluent limit be established on effluent phosphorus. Athens requested the limits be eliminated altogether since they are based on an assessment rather than promulgated treatment standards or water quality criteria. The delay in permit issue allows for revised permit terms and conditions consistent with the statewide nutrient reduction framework.

The 2012 draft permit proposed permit terms and conditions consistent with the anti-degradation provision of state water quality standards. The state-wide nutrient reduction framework was not developed for state-wide implementation in 2012 and could only be applied to watersheds where sufficient watershed data was available to establish commensurate wasteload allocations. In 2015, the division finalized a state-wide nutrient framework that it intends to implement beginning with Group 1 watersheds (permits expiring in 2016). Even though Athens is in a Group 2 watershed (expiring in 2017), the strategy and strategy computer model allow for application of the framework principals in this final permit.

Specific detail about the framework is in the Appendix to this Addendum to Rationale at permit issue. The addendum also serves to explain, in response to comment from Athens, why nutrient limits have to remain in the permit, and why nutrient terms and conditions are being proposed to include biological optimization of nutrient removal. In summary, the permit continues to propose nutrient load limits, requires biological optimization for nutrient removal, and imposes more

stringent limits at the end of the optimization period that were developed using the SPARROW model. The appendix to this rationale provides additional detail.

The Tennessee Clean Water Network (TCWN) commented in writing on the draft permit public noticed in August 2012 and specifically stated that water quality based effluent limits be developed and imposed in this permit to address the assessed stream impairment. Water quality based limits cannot be developed at this time.

APPENDIX TO ADDENDUM AT PERMIT ISSUE

PERMIT STRATEGY
STATEWIDE NUTRIENT REDUCTION FRAMEWORK (NRF)
October 19, 2015
Athens Oostanaula STP
NPDES #TN0024201

APPENDIX CONTENTS

1. SCREENING FACTS

Strategy Resources:
Framework Version: January 2015
(http://tn.gov/assets/entities/environment/attachments/tennessee-draft-nutrient-reduction-framework_01-21-2015.pdf)
Implementation Guidance Version: Pending
SPARROW SAGT HUC 10 Facts:

	Total N	Total P	Target
PS/NPS Ratio*	0.57	0.91	<0.3
Enrichment Factor (EF) Current load/Background	2.44	4.53	<1.53 N <2.78 P
Impact Level	High	High	Low
Ave Q / Design Q		44%	

Current Controls:

Limits:	Total N	Total P
(Summer only)	250 lb/d MA** @ 6.0 MGD	50 lb/d MA @ 6.0 MGD
(Summer only)	325 lb/d WA** @ 6.0 MGD	65 lb/d WA @ 6.0 MGD
Ambient:		
Chemical	No	No
Biological	No	No
Other	No	No

*PS/NPS = ratio of point source loads to non-point source loads
** MA = monthly average; WA = weekly average

2. SUCCESS STORIES: ISSUES LEARNED/DECISIONS MADE

Athens has no official success stories directly related to optimization of existing treatment for nutrient removal at this permit reissue. The facility operators have given past consideration to optimization due to the current limits and the cost of meeting them. More recently, in the past year, they gave a more focused effort on biological removal but stopped for fear of upsetting the treatment plant and violating the current limits. However, Athens does have success stories that relate indirectly to nutrients and stream health. First, Athens continues its commitment to provide service to new customers with low pressure collection system/grinder pump systems. This design reduces potential for inflow and infiltration (I/I) and serves to reduce the rate of flow variability presenting at the sewage treatment works related to I/I. Reductions in flow variability and peaking factors contribute positively to biological pollutant removal as well as mitigates the impact of collection system overflows into waters. In addition to working on impacts of inflow and infiltration directly, Athens has participated with non-point source stakeholders to realize a delisting of Oostanaula Creek for pathogen impairment (E. coli). E. coli from non-point sources logically present along with nutrient components, so the delisting represents an ambient condition in which impacts of nutrient point sources can now be viewed more clearly. As noted in the rationale developed for this draft permit in 2012, the division's biological assessment data suggested a combination of factors were preventing biological integrity from meeting eco-region goals. The permittee has addressed some of those factors with visible results.

In August 2015, TDEC lifted the contact advisory for 1.8 miles of Oostanaula Creek. The department had listed approximately 3 miles of stream impaired by E. coli (or fecal coliform) in 1984 due to an array of causes including inadequately treated effluent from the STP, urban runoff, chronic collection system overflows, and a high concentration of livestock accessibility to the stream. The division recognizes that upgrade of the STP and reduction in frequency and duration of collection system overflows have contributed to the attainment of use support (https://www.tn.gov/environment/news/17042).

3. PRESCRIBED LIMITS AND RATIONALE SUMMARY

Narrative Prescription:

This final permit will allow Athens the opportunity to optimize for biological nutrient removal (nitrogen and phosphorus). Therefore, this permit replaces the existing monthly average and weekly average load limits in summer only to an annual, year-round, load limit calculated monthly as an annual (12-month) average. The lb/d treatment level that is represented by the current summer load limits for both pollutants will remain the permitted level of pollutant removal. Additionally, the permit includes conditions to enable and encourage the continued exploration of biological nutrient removal. While not a limit, the division is encouraging a reduction in phosphorus loading if possible without the use of added chemicals. Based on division computer modeling, the phosphorus optimization goal is a 18.7% reduction from the existing average concentration of 0.87 mg/l to an annual load based on 0.3 mg/l at the 6.0 MGD design flow. This equates to an unbinding, optimization target annual load of 5,451 lb/year total phosphorus. This permit does not impose the target as a limit for the reasons identified below.

In a preliminary final draft prepared for consideration in September 2015, the division considered imposing this annual phosphorus load as a limit in conjunction with conditions of a

treatment plant optimization program that would enable Athens to avoid a permit violation when excursion of the limit was due to plant upset related to optimization of biological phosphorus removal. Based on both internal and external review of that proposed final draft, the permit writer has simplified this rationale and converted the existing 50 lb/d, monthly average TP limit in summer months, to an 18,250 lb/yr limit (50 lb/d x 365 d/yr = 18,250 lb/yr). The previous final draft intended treatment optimization as the objective with the load reduction as the target. The results of both the optimization effort and the resulting water quality results will both factor into any future nutrient limits and/or conditions.

Therefore, permit conditions associated with optimization of biological phosphorus removal continue to apply. These conditions include: Allow for optimization over the next 18 months at which time an updated application for permit renewal will be due; Allow the optimization activity to use of test methods other than those approved in 40 Part 136 Methods; And allow for means of upsets related to optimization to receive discretion in permit compliance reporting. These conditions are summarized pictorially in the following table and followed by additional rationale.

Prescription Form:

√					
	Limits				
	Treatment Level	Value/Unit	Limit Frequency	Qualifier	Sampling Frequency
	Cap TN				
	Cap TP				
	8.0 mg/L TN/ 1.0 mg/L TP				
	5.0 mg/L TN/ 0.5 mg/L TP				
√	Other: Cap TN	91,323 lb/yr	Monthly	Annual Rolling Ave Load	TN, weekly effluent
√	Other: Cap TP	18,250 lb/yr	Monthly	Annual Rolling Ave Load	TP, weekly effluent
	Method	Compliance Schedule			
√	Optimize N Removal	During 18± months of remaining permit term prior to application due			
√	Optimize P Removal	During 18± months of remaining permit term prior to application due			
		Location		Schedule	
	Sampling	(u/s, d/s, 001, other)		Frequency	Period
	Ambient:				
	TN, TP, Ortho P, Nitrates				
	Other:				
	Biological:				
	SQSH				
	Bio-Recon				
	Habitat				
	Special Conditions	Permit Section			
	Re-opener clause				
√	Allow alternative test methods				
√	Allow for upset reporting				
√	Annual update				

Rationale:

In implementing water quality law, the TDEC Division of Water Resources is responsible for implementing both federal and state law and their implementing regulations through monitoring, assessment, and permitting. The division routinely assesses the condition of Tennessee waters to identify those that have quality insufficient to maintain their designated uses. Additionally the division identifies waters that it believes will not have the quality to maintain support in the near future unless measures are taken to address conditions interpreted to be a movement of water quality toward impairment. The division publishes these stream segments every other year pursuant to Section 303(d) of the Federal Clean Water Act. These division assessments on the

303(d) lists serve to establish pollutants for which there are unavailable conditions. Therefore, this permit issued by the division cannot, and does not, ignore that fact. The anti-degradation statement in the Tennessee water quality standards specifically requires that discharges not further a condition of unavailable conditions.

On the other hand, as Athens recognizes, what may be interpreted as a trending away from unavailable conditions may be related to the 10-years of effort it has made removing nutrients from its wastewater. Therefore, this permit continues to impose limits that are comparable to those under which the progress has been made along with providing the opportunity to see if it's possible to achieve the same results without adding chemicals to the process. Eliminating the use of ferric chloride for phosphorus removal is within the NPDES program goal of eliminated a pollutant also. The division will subsequently reassess Oostanaula Creek. This is consistent with the draft Tennessee Nutrient Reduction Framework.

The division has developed the statewide framework as an adaptive management approach. This is an iterative approach whereby the most practical treatment methods are prescribed for the symptoms and facts presenting followed by assessment of results and application of more stringent controls in subsequent control mechanisms. Control mechanisms may include permits, orders, agreements or any other legal arrangement allowable by law or regulation. This adaptive approach will ultimately identify where stream-specific wasteload allocations need to be developed through total maximum daily load (TMDL) development. The unbinding optimization target for phosphorus of 5,451 lb/yr was developed consistent with this framework and the modeling it incorporates.

State-wide Nutrient Reduction Framework Model

The SPARROW model is developed and supported by the United States Geological Survey (USGS) for regional watersheds in the nation. The term “SPARROW” refers to SPAtially Referenced Regressions On Watershed attributes, a model that relates in-stream water-quality data to spatially referenced characteristics of watersheds, including pollutant sources and transport factors. The SPARROW model performs a nonlinear least squares multiple regression on hydrologic elements to determine constituent load. The framework employs the concepts of an enrichment factor (EF) and aggregated WWTP loads to develop a decision making matrix of performance levels for both total phosphorus and total nitrogen. The division calculates both the EF and percentage of wastewater contribution from the SPARROW model.

This approach sets realistic numeric percent reduction goals that result in the best possible conditions given available BMPs and other pollutant controls. To achieve the water quality requirement, the framework ultimately prescribes a reduction in pollutants discharged from point sources and the implementation of BMPs that mitigate or reduce the adverse effects of stressors on the stream’s overall ecology.

The loadings from the SPARROW model are used to determine the enrichment factor. Atmospheric deposition load represents background for nitrogen and soil-parent rock (S-P R) load represents background for phosphorus. Enrichment factors for nitrogen and phosphorus were calculated for each HUC 10 watershed. The calculated EFs and percent WWTP contributions for HUC 10 watersheds were used to derive thresholds for a decision-making matrix to determine the appropriate level of treatment requirement from WWTPs.

Limit Development

Load limits, versus concentration limits, give credit for any waste water diverted from the outfall for reuse and thereby encourages reuse alternatives. Annual rolling average load limits allow operational flexibility in achieving the load limits through optimization of biological removal. Biological treatment is capable of achieving nutrient removal and is preferred to chemical removal for a couple of reasons. Chemical addition to the treatment processes is potentially a source of added degradation to the receiving stream and biological removal has the capability of recovering energy thereby reducing the carbon footprint of the activity. Additionally, division water quality assessments have identified situations where wastewater treatment plant optimization can allow macro-invertebrate communities to achieve index scores that achieve eco-region goals.

Therefore, the permit requires an optimization study in Section 3.7 of the permit to determine if existing load limits and/or reductions can be achieved via optimization of the existing treatment processes and programs. An interim report is due after 12 months and final report is due with the application for permit renewal for consideration in developing future permit terms and conditions.

4. DEFINITIONS/CONCEPTS

The "***nutrient reduction framework (NRF)***" refers to Tennessee’s state-wide strategy aimed to effect a reduction in nutrient loads to streams from both point and non-point sources with the

objective being to attain nutrient water quality goals in watersheds so that use support can be maintained.

The "***adaptive management approach***" is an iterative approach whereby the most practical treatment methods are prescribed for the symptoms and facts presenting followed by assessment of results and application of more stringent controls in subsequent control mechanisms. Control mechanisms may include permits, orders, agreements or any other legal arrangement allowable by law or regulation.

The "***enrichment factor (EF)***" is a representation of the estimated point source load contribution to the total HUC 10 watershed load. Is it the ratio of the estimated loads from all source categories to the estimated load from categories of activities representing background conditions over which point sources have little or no control.

"***Optimization***" is the process of evaluating operational changes to existing processes and controls in order to achieve reductions in effluent loads. For nutrient reductions, optimization may include, but not be limited to, operational changes that are designed to enhance nitrification and phosphorus removal such as creation of anoxic zones, septage management practices, side stream management or by affecting modifications to processes or operations of industrial pretreatment waste streams.

5. FINAL REPORTING FORMAT

The division has developed an excel workbook with spreadsheets for the final report required of Section 3.7 of the permit. The workbook is titled, *TN0024201 Facility Nutrient Reduction Tracking_Athens Oostanaula,* and is forwarded as a separate attachment to this permit.

RATIONALE

AUB-Oostanaula Creek STP
NPDES PERMIT No. TN0024201
DATE: 08/27/12
Permit Writer: Wade Murphy

6. FACILITY INFORMATION

AUB-Oostanaula Creek STP
Ms. Jill Davis P.E.- Superintendent
Athens, McMinn County, Tennessee
(423) 745-4501
Treatment Plant Average Design Flow: 6 MGD
Percentage Industrial Flow: 9% of actual average flow
Treatment Description: Extended aeration activated sludge preceded by screening and grit/grease removal and followed by clarification, filtration and UV disinfecting. Sludge is aerobically digested and dewatered via belt press.

7. RECEIVING STREAM INFORMATION

Oostanaula Creek Mile 30.1
Watershed Group: Hiwassee
Hydrocode: 6020002
Low Flow: 7Q10 = 3.6 MGD; 30Q5 = 4.5 MGD
Low Flow Reference:
USGS Low Flow Program: TDEC Version 3.0.1
Water Quality Designation: Unavailable Conditions

Stream Classification Categories:

Domestic Wtr Supply	Industrial	Fish & Aquatic	Recreation
	X	X	X
Livestock Wtr & Wlife	**Irrigation**	**Navigation**	
X	X		

Water Quality Assessment: Not supporting

8. CURRENT PERMIT STATUS

Permit Type:	**Municipal**
Classification:	**Major**
Issuance Date:	**30-JUL-10**
Expiration Date:	**30-SEP-12**
Effective Date:	**01-SEP-10**

9. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

a. The terms and conditions of this permit are unchanged from those issued July 30, 2010, with the exception that limiting, monitoring and reporting for cyanide is removed based on new information. During the short permit cycle between 2010 and 2012, the permittee sampled for cyanide often enough to demonstrate that the single high value of June 2009 is an outlier. See Section 6.7 below.

b. Compliance Schedule Summary

Description of Report to be Submitted	Reference Section in Permit
Monthly Discharge Monitoring Reports	1.4.1
Monthly Operational Reports	1.4.4
Monthly Bypass and Overflow Summary Report	1.4.5.1
Industrial Waste Survey Report once every 5 years	3.2.a.viii
Sludge analysis must be submitted by February 19th of each calendar year	3.3.a
Biomonitoring Report beginning within 180 days of the effective permit date	3.4

c. For comparison, this rationale contains a table depicting the previous permit limits and effluent monitoring requirements in Appendix 1.

10. PREVIOUS PERMIT DISCHARGE MONITORING REPORT REVIEW

A review of the DMR summary from September 2010 – July 2012 reveals that the City of Athens has complied with all monitored and reported effluent terms and conditions except for collection system overflows. During the first 22 months of the previous permit reporting period there were 15 overflows with 13 of them being wet-weather related.

A complete discharge monitoring report summary is located in Appendix 2.

11. PROPOSED EFFLUENT LIMITS & RATIONALE

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	DAILY MINIMUM PERCENT REMOVAL	RATIONALE
$CBOD_5$ (May 1- Oct. 31)	7	350	9	450	11	40	D.O. protection, Refer to 6.1)
$CBOD_5$ (Nov. 1- April 30)	12	600	16.5	826	19	40	D.O. protection, Refer to 6.1 below
NH_3-N (May 1- Oct. 31)	0.9	47	1.4	70	1.8	—	D.O. protection, Refer to 6.2 below
NH_3-N (Nov. 1- April 30)	2.0	100	3.0	150	4.0	—	D.O. protection, Refer to 6.2 below
Total Suspended Solids	30	1501	40	2001	45	40	T.C.A. 1200-4-5-.09
Dissolved Oxygen (mg/l)	6.0 (daily minimum) instantaneous	—	—	—	—	—	D.O. protection, Refer to 6.1 below
Total Nitrogen	—	250	—	325	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
Total Phosphorous	—	50	—	65	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
E. coli (colonies/100ml)	126/100 ml	—	—	—	941/100 ml	—	T.C.A. 1200-4-3-.03, Refer to 6.5 below
Settleable Solids (ml/l)		—	—	—	1.0 (daily maximum)	—	T.C.A. 1200-4-5-.09
pH (standard units)	6.0-9.0	—	—	—	—	—	T.C.A. 1200-4-3-.03
Flow (MGD):							
Influent	Report	—	—	—	Report	—	Used to quantify pollutant load
Effluent	Report	—	—	—	Report	—	Used to quantify pollutant load
Whole Effluent Toxicity:							
IC_{25}	64% per sample	—	—	—	—	—	Refer to 6.6 below
Metals & Toxics:							Refer to 6.7 below
Sanitary Sewer Overflows, Total Occurrences			Report				Refer to 6.9 below
Dry Weather Overflows, Total Occurrences			Report				Refer to 6.9 below
Bypass of Treatment, Total Occurrences			Report				Refer to 6.9 below

Note: Weekly limitations on $CBOD_5$ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) or 133.102(a)(4)(2) & 133.102 (b)(2) respectively; daily $CBOD_5$ and TSS limitations are authorized by T.C.A. 1200-4-5-.09; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for $CBOD_5$ and TSS are required per 40 CFR 133.102(a)(3) or 133.102(a)(4)(iii) and 133.102 (b)(3) respectively. A minimum 40% daily removal rate is required as equivalent to a daily mass load limitation.

6.1. $CBOD_5$, DISSOLVED OXYGEN, AND PERCENT REMOVALS REQUIREMENTS

Biochemical oxygen demand, or BOD, is a measure of the oxygen used when biological processes break down organic pollutants in wastewater. The amount of oxygen used is more specifically referred to as the five-day biochemical oxygen demand, or BOD_5. This parameter is used in the wastewater industry to measure both the strength of wastewater and the performance of wastewater treatment processes. When the test inhibits any oxygen demand resulting from the oxidation of ammonia in the wastewater, the parameter is referred to as the carbonaceous biochemical oxygen demand, or $CBOD_5$.

In addition to $CBOD_5$, NH_3-N undergoes biological oxidation in a receiving stream thereby utilizing in stream oxygen and potentially reducing oxygen levels below water quality standards. Ammonia as N is also a pollutant that exhibits toxicity to fish and other aquatic life. The two affects are analyzed separately and the division imposes the most stringent limit in the permit.

Streeter-Phelps modeling was performed during a previous issuance of this permit at various conditions to determine allowable organic loadings. The monthly average limits for $CBOD_5$ (7 mg/l-summer, 12 mg/l-winter), NH_3-N (0.9 mg/l-summer, 2 mg/l-winter), and D.O. (6 mg/l) still apply and are considered sufficient to result in an instream dissolved oxygen concentration that remains above the required minimum of 5.0 mg/l. Modeling results are located in the permit file administrative record.

b. The treatment facility is required to remove 85% of the $CBOD_5$ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

(1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
(2) To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove 40% of the $CBOD_5$ and TSS that enter the facility on a daily basis. This percent removal will be calculated one time per week and recorded on the Monthly Operation Report. The number of excursions (days when $CBOD_5$ and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report.

6.2. NH_3-N TOXICITY

To access toxicity impacts, the state utilizes the EPA document, 1999 Update to Ambient Water Quality Criteria for Ammonia, pursuant to 1200-4-3-.0-3(3)(j), and assumed stream temperatures of 25°C and 15°C and pH of 8.0 to derive an allowable instream protection value protective of chronic exposure to a continuous discharge. A mass balance equation with sewage treatment facility and stream flows and this allowable value determines the monthly average permit limit. The criteria document states that a 30Q5 flow value is protective in deriving allowable values. Where the division has 30Q5 flow values, the division may use them. Otherwise, the division utilizes the available 7Q10 or 1Q10 values that are generally more conservative.

The criteria continuous concentrations (CCC) derived from assumed temperature and pH values are as follows:

CCC values based on temperature and pH, in mg/L:

Temperature (°C)	7.5 pH	8.0 pH
25	2.22	1.24
27	1.94	1.09
30	1.61	0.90

Temperature (°C)	7.5 pH	8.0 pH
15	4.22	2.36
17	3.72	2.07
20	3.06	1.71

The mass balance equation is as follows:

$$CCC = \frac{Q_S C_S + Q_{STP} C_{STP}}{Q_S + Q_{STP}} \qquad \text{or,} \qquad C_{STP=} \frac{CCC(Q_S + Q_{STP}) - (Q_S C_S)}{Q_{STP}}$$

where:

CCC = Criteria continuous concentration (mg/l)
Q_S = 7Q10 flow of receiving stream (MGD)
Q_{STP} = Design flow of STP (MGD)
C_S = Assumed/Measured instream NH_3 (mg/l)
C_{STP} = Allowable STP discharge of NH_3 (mg/l)

C_{STP} = $\frac{1.24\ (3.6\ MGD + 6\ MGD) - (3.6\ MGD \times 0.1 mg/l)}{6\ MGD}$ =1.9 mg/l (summer)

C_{STP} = $\frac{2.36\ (4.5\ MGD + 6\ MGD) - (4.5\ MGD \times 0.1 mg/l)}{6\ MGD}$ = 4.1 mg/l (winter)

Because the NH_3-N concentration limits calculated to protect dissolved oxygen are more restrictive than the toxicity limits calculated above, the monthly average limits for NH_3-N (0.9 mg/l-summer, 2.0 mg/l-winter) are applied to the permit.

6.3. CHLORINATION

This permit does not limit total residual chlorine since chlorine is no longer used for disinfecting.

6.4. TOTAL NITROGEN AND TOTAL PHOSPHOROUS LIMITATIONS

This permit retains the nutrient load limits imposed in the previous permit on the bases of the anti-backsliding provisions of 1200-4-5-.08(j), the most recent biological assessment and the current total maximum daily load (TMDL) status. The nutrient limits were developed in a previous permit cycle for an expansion of the treatment facility from 2.83 to 6.0 MGD design flow. A TMDL for phosphates has not been developed, and the biological integrity in Oostanaula Creek at RM 28.4 does not meet the target index score for Ecoregion 67i yet, so pollutant load limits continue to apply.

For publicly owned treatment works, there is no regulatory requirement for nutrient removal technology and such is required only for water quality reasons. Concentration limits first imposed by the division for nitrogen and phosphorus several permit cycles ago established the level of pollutant removal technology to be utilized on discharges to waters of the state from an expanded treatment facility. Those limits were imposed in summer only and this permit continues that arrangement until such time a TMDL or other nutrient reduction strategy is developed.

Treated wastewater diverted for reuse in irrigation will also eliminate nutrients from streams. Such reuse water would lose some of its irrigation value if nutrients are removed. Therefore, concentration limits on total nitrogen and total phosphorus are no longer imposed to encourage beneficial reuse of the treated wastewater. Waters used for reuse purposes and not discharged directly to Oostanaula Creek would not be subject to the load limitations established for nutrients but are alternatively subject to the reuse terms and conditions specified in Sections 1.2 and 3.6 of the permit.

More detail regarding the biological assessment is as follows: The division collected samples for semi-quantitative single habitat macro-invertebrate surveys on February 12, 2008, on Oostanaula Creek at river miles 28.4 and 5.8. As summarized in the table below, the results indicate that the macro-invertebrate assemblage at river mile 28.4 (approximately 2 miles downstream of the POTW discharge) fails to meet regional goals, but meets the goal at river mile 5.8. The greatly reduced percentages of EPT and clingers, coupled with the increased percentages of OC and moderately impaired habitat score at Mile 28.4 suggest the impacts are a function of habitat factors in addition to water quality factors. The division assessment cites the discharges from municipal point source discharges and the separate storm sewer system as contributing to the water quality impacts. The former could include impacts by collection system overflows which are prohibited by this permit.

River Mile	# Organisms	# Taxa	EPT	%EPT	%OC	% NCBI	%Clingers	% Nutrient Tolerant	Index Score	Habitat Score
28.4	200	45	8	19	70	6.46	13.5	37.5	22	101
5.8	170	31	10	69.4	21.8	4.39	67.1	30	40	139
Target Scores									32	≥120
(Eco-Region 67i)										
EPT =	mayflies, stoneflies and caddisflies - considered sensitive to pollution									
OC =	worms and midges - many species tolerate pollution									
Clingers=	organisms that build fixed retreats or have adaptations to attach to surfaces in flowing water									

6.5. *E. COLI* REQUIREMENTS

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection.

The division imposes an *E. coli* limit on discharges of treated sewage for the protection of recreational use of the stream in lieu of the fecal coliform limit. The *E. coli* daily maximum limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

6.6. BIOMONITORING

The division evaluates all dischargers for reasonable potential to exceed the narrative water quality criterion, "no toxics in toxic amounts". The division has determined that for municipal facilities with stream dilutions of less than 500 to 1, any of the following conditions may demonstrate reasonable potential to exceed this criterion.

a. Toxicity is suspected or demonstrated.
b. A pretreatment program is required.
c. The design capacity of the facility is greater than 1.0 MGD.

In cases where a discharger has characterized its effluent via toxicity test methods acceptable to the division, reasonable potential to exceed the criterion is evaluated using the following rationale.

EPA's **Technical Support Document for Water Quality Based Toxics Control** (TSD) recommends that the evaluation of both acute and chronic toxicity be based on the number of observations in the data set, the coefficient of variation and an uncertainty factor. The uncertainty factor value is taken from a chart in the technical support document and the coefficient of variation (C.V.) is based on the following numbers.

Less than ten observations C.V. = 0.6
More than ten observations C.V. = Standard Deviation/Mean

The result of each biomonitoring test is converted to toxic units with the equations listed below.

Acute Biomonitoring $TUa = 1/LC_{50}$
Chronic Biomonitoring $TUc = 1/IC_{25}$

The highest numerical value of the acute data set (in TUa) is multiplied by the uncertainty factor (U.F.) and the dilution factor to derive the final acute value. The highest numerical value of the chronic data set (in TUc) is also multiplied by the uncertainty factor and the dilution factor to derive the final chronic value.

Dilution factor = design flow / 7Q10
Final Acute Value = TUa X Uncertainty Factor X Dilution Factor
Final Chronic Value = TUc X Uncertainty Factor X Dilution Factor

The final acute value is compared to the criteria maximum concentration (CMC) for acute toxicity (CMC = 0.3TUa). The CMC is defined as the highest instream concentration of an effluent to which organisms can be exposed to for a brief period of time without causing an acute effect. The final chronic value is compared to the criteria continuous concentration (CCC) for chronic toxicity (CCC = 1.0TUc). The CCC is defined as the highest instream concentration of an effluent to which organisms can be exposed to indefinitely without causing an

unacceptable effect. In the absence of chronic data, an acute to chronic ratio (ACR) of 4.4 is assumed (TSD Appendix A.3).

Chronic toxicity testing applies since the design flow of this POTW exceeds the low stream flow thereby creating potential for chronic exposure to treated effluent. Because the design capacity of the facility exceeds 1.0 MGD and a pretreatment program is required, the facility is considered to have the reasonable potential to violate the narrative water quality criterion, "no toxics in toxic amounts". Therefore, toxicity testing is required. However, since all previous testing results have reported toxicity values of >100%, the monitoring and reporting frequency will continue to be annual.

The following calculation is the minimum dilution at which chronic toxicity testing must be conducted to demonstrate reasonable potential for toxicity. Since there is no significant difference between it (62.5%) and the previously used 64%, the value of 64% will continue to be imposed.

$$IC_{25}\ \% = \frac{\text{Design Flow}}{\text{Low Flow+ Design Flow}} * 100 \geq \frac{6}{3.6+6} * 100 > 62.5\%$$

where:

3.6 = Low Flow - 7Q10 (MGD)
6 = Design Flow Capacity (MGD)
IC_{25} = Concentration causing 25% reduction in survival, reproduction and growth of test organisms

6.7. METALS AND TOXICS

Pass-through limitations for heavy metals and other toxic substances are being recalculated as part of the permit issuance process and/or due to changes in industrial waste contribution to the POTW. This POTW is required to implement/maintain a pretreatment program. More frequent monitoring will be required **in the permit** if (a) the reported concentrations approach or exceed calculated allowable values, (b) significant amounts of particular pollutants are present which may impact the treatment process sludge character or the receiving stream, or (c) minimum information is lacking to accurately calculate water quality protection values, in which case additional stream monitoring may also be required.

An evaluation of the semi-annual report data and application data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. Appendix 3 lists the metal and toxic parameters calculations and the procedure used to derive the results.

Cyanide limits were imposed in the permit issued July 30, 2010, due to one high value for cyanide reported for June 2009. That value was 0.37 mg/L. That value is an outlier based on the samples collected between September 2010 and July 2012. The data is given an analyzed in the table on the next page.

Analysis of Cyanide Data:

Date	Calc. Value	Actual Value
Unit	mg/L	mg/L
3/18/2008	0.005	<0.005
8/21/2008	0.005	<0.005
6/4/2009	0.37	0.37
12/8/2009	0.005	<0.005
5/18/2009	0.005	<0.005
Sep. 2010	0.005	<0.005
Oct. 2010	0.005	<0.005
Nov. 2010	0.005	<0.005
12/6/2010	0.005	<0.005
1/5/2011	0.005	<0.005
2/1/2011	0.005	<0.005
3/2/2011	0.005	<0.005
4/5/2011	0.005	<0.005
5/2/2011	0.009	0.009
6/2/2011	0.009	<0.005
7/7/2011	0.005	<0.005
8/8/2011	0.005	<0.005
8/17/2011	0.005	0.0052
9/19/2011	0.0052	<0.005
10/3/2011	0.005	<0.005
11/2/2011	0.005	<0.005
12/15/2011	0.005	<0.005
Jan. 2012	0.005	<0.005
Feb. 2012	0.005	<0.005
Mar. 2012	0.005	<0.005
Apr. 2012	0.005	<0.005
5/1/2012	0.005	<0.005
Jun. 2012	0.005	<0.005
Jul. 2012	0.005	<0.005
Average:	0.0179	
SD:	0.0677	
2 x SD:	0.1355	
Ave + 2 x SD:	0.1533	
0.37 > 0.1533 therefore, outlier		

6.8. VOLATILE ORGANIC, ACID-EXTRACTABLE, AND BASE-NEUTRAL COMPOUNDS

The division evaluated effluent concentrations of volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium and thallium for potential to violate water quality criteria using the following mass balance equation:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm	=	resulting in-stream concentration after mixing
Cw	=	concentration of pollutant in wastewater
Cs	=	stream background concentration
Qw	=	wastewater flow, (STP design flow)
Qs	=	stream low flow

to protect water quality:

$$Cw \leq Ca$$

where:

Ca = STP effluent concentration allowable

$$= \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

and (S_A) = the percent “Stream Allocation”.

The reasonable potential evaluation uses the following assumptions and procedures:

a. Stream background concentrations, Cs, for all volatile organic, acid-extractable, and base-neutral compounds equal zero unless actual stream data exists to show otherwise. Use of the effluent concentrations of such pollutants contributed by upstream dischargers as background is not justifiable due to the volatility and reactivity of these pollutants.

b. The stream allocation, S_A , is 90% and is used as a factor of safety.

c. A mass balance uses the STP design flow, the receiving stream critical low flow (7Q10 or 1Q10), the state water quality numeric criteria, and the stream allocation safety factor to derive the allowable effluent concentrations.

d. When pollutants have potential to violate standards because the concentrations are below the scan detection levels but could be above the allowable water quality based effluent concentrations, the pollutants are handled one of three (3) ways:

i. Additional testing of detected and non-detected pollutants is required if contributing industrial processes are likely to contain them and the effluent scans have not met the minimum required detection levels (RDL) in the state water quality standards or approximated the method detection limits (MDL) of the approved test methods for the pollutants in 40 CFR Part 136.

ii. If the required RDL has been used and resulted in non-detection, or if an MDL has been used with non-detection and the contributing industrial processes do not reasonably contain that pollutant, the division drops the pollutant from further consideration.
iii. Pollutants detected at levels high enough to violate standards are limited in the permit to the allowable concentration, Cw, based on STP design flow.

Calculations for this permit have been done using a standardized spreadsheet, titled "WQ Based Effluent Calculations- Other Compounds", and are located in Appendix 4. All metals other than antimony, arsenic, beryllium, selenium, and thallium have been evaluated using procedures described in the rationale, or fact sheet, section headed, “METALS & TOXICS”.

The evaluation indicates that volatile organic, acid extractable, and base neutral compounds and antimony, arsenic, beryllium, selenium, and thallium do not exhibit the potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

6.9. OVERFLOW AND BYPASS REPORTING

For the purposes of demonstrating proper operation of the collection, transmission, and treatment system, the permit defines overflow as any release of sewage other than through permitted outfalls. This definition includes, but is not necessarily limited to, sanitary sewer overflows and dry weather overflows as defined. For example, a collection system blockage or hydraulic overload that causes backup and release of sewage into a building during a wet weather event may not clearly fit either the definition of a sanitary sewer overflow or a dry weather overflow. Still, any unpermitted release potentially warrants permittee mitigation of human health and/or water quality impacts via direct or indirect contact and demonstrates a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

However, for the more typical, unpermitted, releases into the environment, this permit intends interchangeable use of the terms, “overflow” and “sanitary sewer overflow” for compliance reporting purposes.

12. OTHER REQUIREMENTS AND CONDITIONS

7.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984.

7.2. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

7.3. PRETREATMENT PROGRAM

The AUB-Oostanaula Creek STP has an approved pretreatment program. An updated Industrial Waste Survey must be completed within 120 days of the effective date of the permit, unless such a survey has been submitted within 3 years of the effective date.

At least once each reporting period, all permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium (trivalent and hexavalent and total if drinking water use applies), copper, lead, nickel, zinc, silver, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit, the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

	PTL	85% PTL	PTL	Apr-12	Oct-11	Apr-11	Oct-10	Apr-10	Oct-09	Apr-09	Oct-08	Apr-08	Oct-07
TN0021253	2/4/2000		4/14/2009										
COPPER	**0.08000**	**0.06800**	**0.08000**	0.02000	0.02000	0.02000	0.02000	0.02000	0.02000	0.02050	0.02000	0.02200	0.02000
CHROMIUM, III	**N/A**	**N/A**	**Report**	0.01000									
CHROMIUM, VI	**N/A**	**N/A**	**Report**	0.01000									
CHROMIUM, TOTAL	**0.06000**	**0.05100**	**0.06000**	0.00100	0.00100	0.00100	0.00100	0.00115	0.00130	0.00105	0.01140	0.00100	0.00245
NICKEL	**0.18000**	**0.15300**	**0.18000**	0.02000	0.02000	0.02000	0.02000	0.01100	0.02000	0.02000	0.02000	0.02000	0.02000
CADMIUM	**0.00500**	**0.00425**	**0.00500**	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00053
LEAD	**0.04500**	**0.03825**	**0.04500**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00155	0.00465	0.00130	0.00145	0.00375
MERCURY	**0.00040**	**0.00034**	**0.00040**	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
SILVER	**0.00500**	**0.00425**	**0.00500**	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00068	0.00050	0.00050	0.00061
ZINC	**0.20000**	**0.17000**	**0.20000**	0.05950	0.05200	0.07600	0.07600	**11.03000**	0.09350	0.10550	0.05350	0.05950	0.06350
CYANIDE	**0.23000**	**0.17768**	**0.20904**	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
TOLUENE	**0.01500**	**0.01275**	**0.01500**	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
BENZENE	**0.00300**	**0.00255**	**0.00300**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
1,1,1 TRICHLOROETHANE	**0.03000**	**0.02550**	**0.03000**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
ETHYLBENZENE	**0.00400**	**0.00340**	**0.00400**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
CARBON TETRACHLORIDE	**0.01500**	**0.01275**	**0.01500**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
CHLOROFORM	**0.08500**	**0.07225**	**0.08500**	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
TETRACHLOROETHYLENE	**0.02500**	**0.02125**	**0.02500**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
TRICHLOROETHYLENE	**0.01000**	**0.00850**	**0.01000**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
1,2 TRANSDICHLOROETHYL	**0.00200**	**0.00170**	**0.00200**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
METHYLENE CHLORIDE	**0.05000**	**0.04250**	**0.05000**	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
TOTAL PHENOLS	**0.05000**	**0.04250**	**0.05000**	0.04000	0.04000	0.04000	0.04000	0.04000	0.04000	**0.06150**	0.04000	0.04000	0.04000
NAPHTHALENE	**0.00100**	**0.00085**	**0.00100**	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100
TOTAL PHTHALATES	**0.06450**	**0.05483**	**0.06450**	0.01100	0.02550	0.00400	0.00400	0.00400	0.00400	0.00400	0.00400	0.00400	0.00400

7.4. PERMIT TERM

This permit is being reissued for 5 years in order to coordinate its reissuance with other permits located within the Hiwassee Watershed.

7.6 TREATED WASTEWATER REUSE

The City of Athens requested authorization during the previous permit term to operate an unrestricted reuse program for industrial customers, commercial developments, golf courses, recreational areas, and residential developments for irrigation in common areas.

Permit terms and conditions associated with beneficial reuse are contained in Sections 1.2 and 3.6 of the permit. In order to protect public health, the division will require that the City of Athens meet a maximum *E.coli* limit and a minimum chlorine residual limit at the primary distribution point an also at points throughout the distribution system.

13. ANTIDEGRADATION STATEMENT/WATER QUALITY STATUS

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# TN06020002083_3000.

The division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be neither an exceptional nor outstanding national resource water. Additionally, this water does is assessed as not support(s) recreation and fish and aquatic life designated uses due to E. coli and sedimentation/siltation from municipal separate storm sewer systems and total phosphorus from municipal point sources and municipal separate storm sewer systems.

This facility disinfects treated wastewater to achieve the water quality standard for recreation in its outfall to the stream. Municipal treatment plants achieving better than secondary treatment levels are not sources of sediment or silt to the stream. This facility installed phosphorus removal equipment in a previous upgrade of the treatment plant to reduce the level of phosphorus being discharged. That load limit continues to apply. A reopener clause is included in Part 1 of the permit in the event that a TMDL or other nutrient reduction strategy determines that additional controls on phosphorous are needed.

TMDLs have been developed and approved for this waterbody segment on the following parameters and dates:

Parameter	TMDL Approval Date
Pathogens	01/23/2006
Siltation and Habitat Alteration	01/23/2006

The proposed terms and conditions of this permit comply with the wasteload allocations of the pathogen TMDL. The siltation and habitat alteration does not establish a wasteload allocation for municipal point sources.

APPENDIX 1
PREVIOUS PERMIT LIMITS

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	DAILY MINIMUM PERCENT REMOVAL	MEASUREMENT FREQUENCY
$CBOD_5$ (May 1- Oct. 31)	7	350	9	450	11	40	1/week
$CBOD_5$ (Nov. 1- April 30)	12	600	16.5	826	19	40	1/week
NH_3-N (May 1- Oct. 31)	0.9	47	1.4	70	1.8	—	1/week
NH_3-N (Nov. 1- April 30)	2.0	100	3.0	150	4.0	—	1/week
Total Suspended Solids	30	1501	40	2001	45	40	1/week
Dissolved Oxygen (mg/l)	6.0 (daily minimum) instantaneous	—	—	—	—	—	5/week
Total Nitrogen (May 1- Oct. 31)	—	250	—	325	—	—	1/week
Total Phosphorous (May 1- Oct. 31)	—	50	—	65	—	—	1/week
E. coli (colonies/100ml)	126/100 ml	—	—	—	941/100 ml	—	3/week
Settleable Solids (ml/l)		—	—	—	1.0 (daily maximum)	—	1/week
pH (standard units)	6.0-9.0	—	—	—	—	—	5/week
Flow (MGD):							
Influent	Report	—	—	—	Report	—	7/week
Effluent	Report	—	—	—	Report	—	7/week
Whole Effluent Toxicity:							
IC_{25}	64% per sample	—	—	—	—	—	1/year
Metals & Toxics:							
Total Cyanide	0.007	0.35	—	0.31	15.5	—	1/month
Sanitary Sewer Overflows, Total Occurrences			Report				continuous
Dry Weather Overflows, Total Occurrences			Report				continuous
Bypass of Treatment, Total Occurrences			Report				continuous

APPENDIX 2
Discharge Monitoring Report Summary

	Flow (MGD)		Biochemical Oxygen Demand				Suspended Solids				Effluent (mg/l)											Overflow & By-passing
			Influent	Effluent (mg/l)		%	Influent	Effluent (mg/l)		%	Total	pH (std. units)		TP	TN	Ammonia		D.O.	E. coli			
	Monthly Average	Daily Max	(mg/l)	Monthly Average	Daily Max	Removal	(mg/l)	Monthly Average	Daily Max	Removal	Cyanide (ml/l)	Min	Max	Load (lb/d)	Load (lb/d)	Monthly Average	Daily Max	Daily Min	Monthly Average	Daily Max	
Limits	Report	Report	Report			85	Report			85	0.007	6.0	9.0					6.0	126	941	
Summer				7	11			30	45					50	250	0.9	2.0				
Winter				12	19			30	45					Rpt	Rpt	1.8	4.0				
Average	2.772	5.701	352	1	3	100	241.7	2	4	99	0.005	7.3	7.9	8.3	54.5	0.2	0.3	7.9	6	20	
Maximum	5.794	15.020	613	3	7	100	611.0	5	20	100	0.006	7.8	8.6	44.6	132.8	1.1	1.5	9.3	28	146	
Minimum	1.393	1.710	167	1	1	98	3.3	1	1	97	0.001	6.8	7.6	1.02	25.40	0.1	0.1	6.0	1	1	
+ = Exceedence																					133
01/31/2008	2.331	4.420	308	1.0	3.5	99.67	187	1.1	3.2	99.43		7.4	8.0			0.16	0.31	8.6	12		1
02/29/2008	3.413	5.880	191	1.0	2.3	99.47	197	1.4	4.1	99.28		7.4	7.8			0.20	0.28	8.4	16		8
03/31/2008	3.815	5.181	196	0.8	2.1	99.61	146	1.8	3.6	98.74		7.3	8.2			0.13	0.20	8.5	11		9
04/30/2008	2.408	3.200	334	0.9	2.4	99.73	340	1.8	7.6	99.46		7.4	7.7			0.13	0.22	8.2	28		3
05/31/2008	2.122	2.910	263	1.2	3.2	99.54	277	1.3	5.1	99.53		7.4	7.8	44.6	132.8	0.12	0.17	6.9	15		
06/30/2008	1.849	2.440	378	1.7	4.3	99.55	262	1.4	6.8	99.47		7.1	8.0	17.5	66.2	0.13	0.23	7.2	12		1
07/31/2008	2.018	4.040	430	2.1	4.1	99.5	367	1.0	2.6	99.73		7.5	7.8	1.02	55.3	0.13	0.42	7.6	20		
08/31/2008	1.938	5.280	471	1.3	2.1	99.73	350	0.7	1.3	99.8		7.5	7.9	1.9	47.8	0.13	0.19	7.6	24		4
09/30/2008	1.782	1.990	449	1.1	3.7	99.7	387	1.0	2.7	99.7		7.0	7.7	1.56	48.5	0.13	0.20	7.7	22		
10/31/2008	1.734	2.080	412	2.8	5.2	99.6	249	0.8	2.1	99.7		7.2	7.8	1.56	37.8	0.13	0.18	7.2	11		1
11/30/2008	1.716	2.190	486	1.3	2.5	99.7	294	1.0	2.5	99.6		7.4	8.5			0.14	0.19	8.4	8		1
12/31/2008	3.530	7.800	231	1.7	4.5	99.3	142	1.1	1.9	99.2		7.2	8.3			0.17	0.21	8.2	5		
01/31/2009	3.804	11.140	188	1.1	2.1	99.4	124	0.8	1.3	99.4		7.5	7.8			0.14	0.21	8.7	8		13
02/28/2009	2.456	3.160	280	0.7	1.7	99.8	194	1.0	1.9	99.5		7.5	7.7			0.14	0.20	8.4	8		
03/31/2009	3.477	5.330	261	1.2	3.0	99.5	193	0.8	1.3	99.6		7.4	7.7			0.13	0.19	8.6	7		6
04/30/2009	3.540	5.270	299	1.2	1.8	99.6	191	0.8	1.3	99.6		7.5	7.9			0.14	0.16	8.1	9		3
05/31/2009	5.639	10.010	192	1.4	4.7	99.3	107	0.8	1.1	99.3		7.3	7.7	5.5	87.1	0.16	0.50	8.1	8		16
06/30/2009	2.573	3.120	401	1.7	5.3	99.6	218	0.9	2.0	99.6		7.5	7.7	35	74.7	0.12	0.33	7.4	14		1
07/31/2009	2.303	6.170	440	1.9	5.3	99.6	3	1.0	3.6	99.7		7.4	7.8	14.4	39.0	0.14	0.40	7.4	15		6
08/31/2009	2.450	3.880	417	2.2	4.7	99.5	267	0.8	1.5	99.7		7.3	7.7	7.8	61.0	0.13	0.19	7.3	15		2
09/30/2009	3.239	8.010	297	1.0	2.0	99.7	217	0.8	1.9	99.6		7.5	7.7	3.96	70.5	0.19	1.00	7.3	8		9
10/31/2009	3.267	5.770	284	1.5	2.9	99.5	251	0.6	2.6	99.8		7.1	8.0	2.77	42.8	0.14	0.17	8.2	12		3
11/30/2009	3.119	5.950	341	1.1	2.4	99.7	201	0.8	2.1	99.6		7.4	7.9			0.12	0.15	8.7	2		2
12/31/2009	4.667	9.610	244	1.1	1.8	99.5	195	1.1	1.5	99.5		7.1	7.8			1.07	1.50	8.2	2		11
01/31/2010	4.236	11.320	264	1.6	4.3	99.4	164	1.0	2.7	99.4		7.3	7.9			0.11	0.14	9.3	1		11
02/28/2010	4.660	9.790	205	1.1	2.3	99.5	131	0.8	2.4	99.4		7.0	7.7			0.12	0.15	9.1	1		4
03/31/2010	2.995	4.000	282	1.2	3.5	99.6	195	1.2	6.2	99.4		7.3	7.7			0.11	0.13	9.1	1		
04/30/2010	2.409	3.360	340	1.7	6.5	99.5	228	1.7	6.9	99.3		7.3	8.6			0.14	0.23	8.5	1		1
05/31/2010	2.518	5.470	311	0.8	1.8	99.8	305	1.5	2.3	99.5		7.4	8.2	3.8	59.0	0.13	0.23	7.0	1		2
06/30/2010	2.026	3.500	373	1.2	2.3	99.7	269	1.1	2.5	99.6		7.4	8.5	4.17	56.3	0.07	0.11	6.9	2		
07/31/2010	1.683	2.560	388	1.0	2.2	99.7	386	1.8	2.9	99.5		7.4	8.0	1.92	57.8	0.14	0.39	7.3	1		
08/31/2010	1.476	1.710	571	1.2	2.8	99.8	372	2.3	5.3	99.4		7.4	7.7	3.7	59.5	0.10	0.13	6.0	1		
09/30/2010	1.398	1.820	556	2.9	3.6	99.5	417	3.8	7.4	99.1	0.005	7.0	7.7	1.95	64.9	0.10	0.13	6.1	16	110	
10/31/2010	1.578	4.640	465	1.2	3.6	99.8	232	5.3	20.0	97.7	0.005	7.3	7.8	11.7	47.2	0.12	0.14	6.5	6	146	
11/30/2010	2.089	9.220	511	0.7	1.6	99.9	238	1.0	1.7	99.6	0.005	7.4	7.9			0.16	0.20	8.1	2	25	1
12/31/2010	2.188	6.810	249	1.0	2.0	99.6	281	0.6	0.7	99.8	0.005	7.3	7.9			0.17	0.22	8.8	1	12	
01/31/2011	2.770	8.990	279	1.3	1.9	99.5	161	1.4	2.8	99.1	0.005	7.2	7.6			0.12	0.14	9.2	1	1	1
02/28/2011	2.093	3.080	330	1.4	1.7	99.6	371	2.3	2.9	99.4	0.005	7.3	7.9			0.59	1.50	8.3	1	29	
03/31/2011	4.782	12.430	210	0.9	1.3	99.6	175	2.3	5.6	98.7	0.005	7.3	7.7			0.20	0.62	8.6	1	2	2
04/30/2011	5.427	11.130	298	1.6	3.1	99.5	155	4.6	10.1	97	0.005	6.9	7.8			0.11	0.12	8.1	1	1	4
05/31/2011	2.914	6.220	570	1.2	2.8	99.8	265	3.3	4.8	98.8	0.006	7.3	8.2	5.82	58.9	0.11	0.16	7.8	1	1	
06/30/2011	1.722	2.420	571	1.2	3.3	99.8	290	4.9	10.8	98.3	0.005	7.4	8.1	10.1	52.5	0.14	0.16	7.0	1	51	
07/31/2011	1.630	2.380	613	2.7	5.2	99.6	333	5.3	6.7	98.4	0.005	6.8	8.0	21	46.0	0.12	0.16	6.3	1	1	
08/31/2011	1.456	1.970	586	1.0	2.4	99.8	365	2.7	4.0	99.3	0.001	7.4	8.0	7.31	42.6	0.14	0.20	6.5	1	2	
09/30/2011	2.673	11.410	310	1.6	3.5	99.5	611	2.1	2.8	99.7	0.005	7.8	8.2	2.03	35.4	0.08	0.13	7.0	1	4	1
10/31/2011	2.242	7.920	461	1.5	2.3	99.7	292	1.2	2.0	99.6	0.005	7.5	7.8	3.77	41.9	0.12	0.16	7.4	1	6	1
11/30/2011	3.941	15.020	312	1.6	2.6	99.5	200	2.3	3.2	98.9	0.005	7.4	7.8			0.13	0.18	8.2	2	47	2
12/31/2011	5.794	10.870	167	2.6	6.3	98.4	132	3.1	7.1	97.6	0.005	7.1	7.9			0.17	0.20	7.6	1	1	2
01/31/2012	4.335	10.500	274	2.0	2.9	99.3	159	1.5	2.4	99	0.005	7.3	7.8			0.16	0.18	8.9	1	13	1
02/29/2012	2.959	4.610	268	1.6	3.3	99.4	146	1.8	2.4	98.8	0.005	7.4	7.8			0.24	0.36	8.9	1	10	
03/31/2012	2.994	6.000	263	2.2	4.6	99.2	138	2.9	3.6	97.9	0.005	7.3	8.0			0.34	0.63	8.1	1	1	
04/30/2012	1.629	2.100	421	1.9	2.4	99.6	210	0.9	1.6	99.6	0.005	7.5	8.0			0.31	0.35	8.2	1	1	
05/31/2012	1.537	2.110	429	1.7	4.4	99.6	212	1.1	1.7	99.5	0.005	7.4	7.9	3.37	34.0	0.37	0.44	7.6	1	2	
06/30/2012	1.393	1.810	364	0.6	0.8	99.8	223	0.7	1.2	99.7	0.005	7.2	8.1	1.61	25.4	0.46	0.62	7.6	1	2	
07/31/2012	1.697	3.550	340	0.9	1.4	99.7	280	1.5	1.6	99.5	0.005	7.2	8.3	3.03	26.4	0.26	0.47	7.0	1	2	

APPENDIX 3
Metal and Toxic Parameter Calculations

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

a. The most recent background conditions of the receiving stream segment are compiled. This information includes:

* 7Q10/30Q5 of receiving stream (3.6/4.5 MGD, USGS TDEC v 3.0.1)
* Calcium hardness (157.133, ambient)
* Total suspended solids (12.067 mg/l, ambient
* Background metals concentrations (ambient and ½ water quality criteria)
* Other dischargers impacting this segment (none)
* Downstream water supplies, if applicable

b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.

d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm	=	resulting in-stream concentration after mixing
Cw	=	concentration of pollutant in wastewater
Cs	=	stream background concentration
Qw	=	wastewater flow
Qs	=	stream low flow

to protect water quality:

$$Cw \leq \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent “Stream Allocation”.

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

Fish and Aquatic Life Protection
7Q10 - Low flow under natural conditions
1Q10 - Regulated low flow conditions

Other than Fish and Aquatic Life Protection
30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic “In-stream Allowable” water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, then the measured background concentration is used in lieu of the chronic “In-stream Allowable” water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the “stream allocation” is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic “In-stream Allowable” water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, consideration may be given as to the degree to which the permittee should be required

to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The “Fraction Dissolved” converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both “Recreation” and “Domestic Water Supply.”

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

Column 15: The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, and (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only.

See table on next page.

WQ Based Effluent Calculations

PASS-THROUGH LIMITATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY:	PERMIT #:	DATE:	CALC BY:
Athens - Oostanaula Creek STP	TN0024201	8/6/2012	YLM

non-regulated stream worksheet (7Q10)

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
3.600	4.500	6.000	12.067	157.133	90

Oostanaula Creek is considered wadeable.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Stream Bckgrnd. Conc.	Fish/Aqua. Life (F & AL) WQC lab conditions		Fraction	F & AL- instream allowable ambient conditions (Tot)		Calc. Effluent Concentration based on F & AL		Human Health Water Quality Criteria *						effluent limited case	
								In-Stream Criteria			Calc. Effluent Concentration **				
	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS		
[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	ug/l	PARAMETER
1.857	13.177	20.573	0.337	39.129	61.091	**55.34**	**86.97**	N/A	N/A	N/A	**N/A**	N/A	N/A	**80.0**	**Copper (a,b)**
0.500	107.312	824.969	0.200	536.122	4121.493	**771.74**	**5934.68**	N/A	N/A	N/A	**N/A**	N/A	N/A		**Chromium III**
0.500	11.000	16.000	1.000	11.000	16.000	**15.57**	**22.77**	N/A	N/A	N/A	**N/A**	N/A	N/A		**Chromium VI**
0.500	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**	N/A	N/A	100.0	**N/A**	N/A	157.16	**60.0**	**Chromium, Total**
5.000	76.225	686.289	0.413	184.700	1662.931	**263.27**	**2391.92**	4600.0	610.0	100.0	**7241.63**	957.38	154.13	**180.0**	**Nickel (a,b)**
0.500	0.337	3.124	0.257	1.309	12.149	**1.62**	**17.22**	N/A	N/A	5.0	**N/A**	N/A	7.54	**5.0**	**Cadmium (a,b)**
1.000	4.101	105.246	0.178	22.999	590.183	**32.58**	**849.32**	N/A	N/A	5.0	**N/A**	N/A	7.20	**45.0**	**Lead (a,b)**
0.006	0.770	1.400	1.000	0.770	1.400	**1.11**	**2.01**	0.051	0.05	2.0	**0.08**	0.07	3.15	**0.4**	**Mercury (T) (c,e)**
0.500	N/A	6.998	1.000	N/A	6.998	**N/A**	**9.81**	N/A	N/A	N/A	**N/A**	N/A	N/A	**5.0**	**Silver (a,b,f)**
8.643	173.257	171.851	0.277	626.124	621.043	**896.95**	**889.64**	N/A	N/A	N/A	**N/A**	N/A	N/A	**200.0**	**Zinc (a,b)**
0.003	5.200	22.000	1.000	5.200	22.000	**7.49**	**31.68**	140.0	140.0	200.0	**220.50**	220.50	315.00	**230.0**	**Cyanide (d)**
0.000								15000.0	1300.0	1000.0	**23625.00**	2047.50	1575.00	**15.0**	**Toluene**
0.000								510.0	22.0	5.0	**803.25**	34.65	7.88	**3.0**	**Benzene**
0.000								N/A	N/A	200.0	**N/A**	N/A	315.00	**30.0**	**1,1,1 Trichloroethane**
0.000								2100.0	530.0	700.0	**3307.50**	834.75	1102.50	**4.0**	**Ethylbenzene**
0.000								16.0	2.3	5.0	**25.20**	3.62	7.88	**15.0**	**Carbon Tetrachloride**
0.000								4700.0	57.0	N/A	**7402.50**	89.78	N/A	**85.0**	**Chloroform**
0.000								33.0	6.9	5.0	**51.98**	10.87	7.88	**25.0**	**Tetrachloroethylene**
0.000								300.0	25.0	5.0	**472.50**	39.38	7.88	**10.0**	**Trichloroethylene**
0.000								10000.0	140.0	100.0	**N/A**	220.50	157.50	**1.5**	**1,2 trans Dichloroethylene**
0.000								5900.0	46.0	N/A	**9292.50**	72.45	N/A	**50.0**	**Methylene Chloride**
0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**50.0**	**Total Phenols**
0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**1.0**	**Naphthalene**
0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**64.5**	**Total Phthalates**
5.500	11.000	19.000	1.000	11.000	19.000	**14.30**	**27.10**	N/A	N/A	N/A	**N/A**	N/A	N/A	**N/A**	**Chlorine (T. Res.)**

hich Fish & Aquatic Life Criteria are expressed as a function of total hardness.
etal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.
rameter is in the total form.
n established that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.
if column 8 is most stringent.
result in a negative number, use results from columns 5 or 6, respectively.
or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.

ded in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

SAR Summary
APPENDIX 4
WQ Based Effluent Calculations- Other Compounds

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Athens - Oostanaula
PERMIT #: TN0024201
DATE: 8/27/2012

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
3.6	4.5	6.0	12.067	157.33	90

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Stream Bckgrnd. Conc.	Dectection Levels Scan MDL	WQC RDL *EPA MDL		F & AL- instream allowable ambient conditions (Tot) Chronic	Acute	Calc. Effluent Concentration based on F & AL, Ca Chronic	Acute	Human Health Water Quality Criteria (30Q2) In-Stream Criteria Organisms	Water/Organisms	DWS	Calc. Effluent Concentration, Ca Organisms	Water/Organisms	DWS	avg. daily effluent (<,=), Cw	
PARAMETER [ug/l]	[ug/l]	[ug/l]		[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	ug/l	**PARAMETER**
ANTIMONY		**3.8**	**3.0**					**4300.0**	**14.0**	**6.0**	**6772.5**	**22.1**	**9.5**	<20	ANTIMONY
ARSENIC		**1.0**	**1.0**	**190.0**	**360.0**	**273.600**	**518.40**	**50.0**	**50.0**	**50.0**	**78.8**	**78.8**	**78.8**	<20	ARSENIC
BERYLLIUM		**2.0**	**1.0**							**4.0**			**6.3**	<2	BERYLLIUM
SELENIUM		**5.0**	**2.0**	**5.0**	**20.0**	**7.200**	**28.800**			**50.0**			**78.8**	<20	SELENIUM
THALLIUM		**5.0**	"					**6.3**	**1.7**	**2.0**	**9.9**	**2.7**	**3.2**	<20	THALLIUM
ACROLEIN	**0.0**	**50.0**	**1.0**					**780.0**	**320.0**		**1228.5**	**504.0**		<50	ACROLEIN
ACRYLONITRILE	**0.0**	**50.0**	**1.0**					**6.6**	**0.6**		**10.4**	**0.9**		<10	ACRYLONITRILE
BENZENE	**0.0**	**1.0**	**1.0**					**710.0**	**12.0**	**5.0**	**1118.3**	**18.9**	**7.9**	<1	BENZENE
BROMOFORM	**0.0**	**1.0**	**1.0**					**3600.0**	**43.0**		**5670.0**	**67.7**		<1	BROMOFORM
CARBON TETRACHLORIDE	**0.0**	**1.0**	**1.0**					**44.0**	**2.5**	**5.0**	**69.3**	**3.9**	**7.9**	<1	CARBON TETRACHLORIDE
CLOROBENZENE	**0.0**	**1.0**	"					**21000.0**	**680.0**		**33075.0**	**1071.0**		<1	CLOROBENZENE
CHLORODIBROMO-METHANE	**0.0**	**1.0**	"					**340.0**	**4.1**		**535.5**	**6.5**		<1	CHLORODIBROMO-METHANE
CHLOROETHANE	**0.0**	**1.0**	"											<5	CHLOROETHANE
2-CHLORO-ETHYLVINYL ETHER	**0.0**	**1.0**	"											<50	2-CHLORO-ETHYLVINYL ETHER
CHLOROFORM	**0.0**	**5.0**	**0.5**					**4700.0**	**57.0**		**7402.5**	**89.8**		<5	CHLOROFORM
DICHLOROBROMO-METHANE	**0.0**	**1.0**	**1.0**					**460.0**	**5.6**		**724.5**	**8.8**		<1	DICHLOROBROMO-METHANE
1,1-DICHLOROETHANE	**0.0**	**1.0**	**1.0**					**32.0**	**0.6**	**7.0**	**50.4**	**0.9**	**11.0**	<1	1,1-DICHLOROETHANE
1,2-DICHLOROETHANE	**0.0**	**1.0**	**1.0**					**990.0**	**3.8**	**5.0**	**1559.3**	**6.0**	**7.9**	<1	1,2-DICHLOROETHANE
TRANS 1,2-DICHLORO-ETHYLENE	**0.0**	**1.0**	"					**140000**	**700.0**	**100.0**	**220500.0**	**1102.5**	**157.5**	<1	TRANS 1,2-DICHLORO-ETHYLENE
1,1-DICHLOROETHYLENE	**0.0**	**1.0**	**1.0**											<1	1,1-DICHLOROETHYLENE
1,2-DICHLOROPROPANE	**0.0**	**1.0**	"					**39.0**	**0.5**	**5.0**	**61.4**	**0.8**	**7.9**	<1	1,2-DICHLOROPROPANE
1,3-DICHLORO-PROPYLENE	**0.0**	**1.0**	**1.0**					**1700.0**	**10.0**		**2677.5**	**15.8**		<1	1,3-DICHLORO-PROPYLENE
ETHYLBENZENE	**0.0**	**1.0**	**1.0**					**29000**	**3100.0**	**700.0**	**45675.0**	**4882.5**	**1102.5**	<1	ETHYLBENZENE
METHYL BROMIDE	**0.0**	**1.0**	"					**4000.0**	**48.0**		**6300.0**	**75.6**		<5	METHYL BROMIDE
METHYL CHLORIDE	**0.0**	**1.0**	**1.0**											<1	METHYL CHLORIDE
METHYLENE CHLORIDE	**0.0**	**5.0**	**1.0**					**16000.0**	**47.0**		**25200.0**	**74.0**		<2.5	METHYLENE CHLORIDE
1,1,2,2-TETRACHLORO-ETHANE	**0.0**	**1.0**	**0.5**					**110.0**	**1.7**		**173.3**	**2.7**		<1	1,1,2,2-TETRACHLORO-ETHANE
TETRACHLORO-ETHYLENE	**0.0**	**1.0**	**0.5**					**88.5**	**8.0**	**5.0**	**139.4**	**12.6**	**7.9**	<1	TETRACHLORO-ETHYLENE
TOLUENE	**0.0**	**1.0**	**1.0**					**200000**	**6800.0**	**1000.0**	**315000.0**	**10710.0**	**1575.0**	<1	TOLUENE
1,1,1-TRICHLOROETHANE	**0.0**	**1.0**	**1.0**							**200.0**			**315.0**	<1	1,1,1-TRICHLOROETHANE
1,1,2-TRICHLOROETHANE	**0.0**	**1.0**	**0.2**					**420.0**	**6.0**	**5.0**	**661.5**	**9.5**	**7.9**	<1	1,1,2-TRICHLOROETHANE
TRICHLORETHYLENE	**0.0**	**1.0**	**1.0**					**810.0**	**27.0**	**5.0**	**1275.8**	**42.5**	**7.9**	<1	TRICHLORETHYLENE
VINYL CHLORIDE	**0.0**	**1.0**	**2.0**					**5250.0**	**20.0**	**2.0**	**8268.8**	**31.5**	**3.2**	<1	VINYL CHLORIDE
P-CHLORO-M-CRESOL	**0.0**	**10.0**	"											<10	P-CHLORO-M-CRESOL
2-CHLOROPHENOL	**0.0**	**10.0**	"					**400.0**	**120.0**		**630.0**	**189.0**		<10	2-CHLOROPHENOL
2,4-DICHLOROPHENOL	**0.0**	**10.0**	"					**790.0**	**93.0**		**1244.3**	**146.5**		<10	2,4-DICHLOROPHENOL
2,4-DIMETHYLPHENOL	**0.0**	**10.0**	"					**2300.0**	**540.0**		**3622.5**	**850.5**		<10	2,4-DIMETHYLPHENOL
4,6-DINITRO-O-CRESOL	**0.0**	**10.0**	**24.0**					**765.0**	**13.4**		**1204.9**	**21.1**		<10	4,6-DINITRO-O-CRESOL
2,4-DINITROPHENOL	**0.0**	**10.0**	**42.0**					**14000.0**	**70.0**		**22050.0**	**110.3**		<10	2,4-DINITROPHENOL
2-NITROPHENOL	**0.0**	**10.0**	"											<10	2-NITROPHENOL
4-NITROPHENOL	**0.0**	**10.0**	"											<10	4-NITROPHENOL
PENTACHLOROPHENOL	**0.0**	**10.0**	**5.0**	**13.000**	**20.000**	**18.7**	**28.8**	**82.0**	**2.8**	**1.0**	**129.2**	**4.4**	**1.6**	<10	PENTACHLOROPHENOL
PHENOL	**0.0**	**10.0**	"					**4600000**	**21000.0**		7245000.0	**33075.0**		<10	PHENOL
2,4,6-TRICHLOROPHENOL	**0.0**	**10.0**	**2.7**					**65.0**	**21.0**		**102.4**	**33.1**		<10	2,4,6-TRICHLOROPHENOL
ACENAPHTHENE	**0.0**	**10.0**	"					**2700.0**	**1200.0**		**4252.5**	**1890.0**		<1	ACENAPHTHENE
ACENAPHTHYLENE	**0.0**	**10.0**	**2.3**											<1	ACENAPHTHYLENE
ANTHRACENE	**0.0**	**10.0**	**0.7**					**110000**	**9600.0**		**173250.0**	**15120.0**		<1	ANTHRACENE
BENZIDINE	**0.0**	**50.0**	"					**0.0054**	**0.0012**		**0.009**	**0.0**		<10	BENZIDINE
BENZO(A)ANTHRACENE	**0.0**	**10.0**	**0.3**					**0.49**	**0.044**		**0.8**	**0.1**		<1	BENZO(A)ANTHRACENE
BENZO(A)PYRENE	**0.0**	**10.0**	**0.3**					**0.49**	**0.044**	**0.2**	**0.8**	**0.1**	**0.3**	<1	BENZO(A)PYRENE
3,4 BENZO-FLUORANTHENE	**0.0**	**10.0**	**0.3**					**0.49**	**0.044**		**0.8**	**0.1**		<1	3,4 BENZO-FLUORANTHENE
BENZO(GHI)PERYLENE	**0.0**	**10.0**	"											<1	BENZO(GHI)PERYLENE
BENZO(K)FLUORANTHENE	**0.0**	**10.0**	**0.3**					**0.49**	**0.044**		**0.8**	**0.1**		<1	BENZO(K)FLUORANTHENE
BIS (2-CHLOROETHOXY) METHANE	**0.0**	**10.0**	"											<10	BIS (2-CHLOROETHOXY) METHANE
BIS (2-CHLOROETHYL)-ETHER	**0.0**	**10.0**	**1.0**					**14.0**	**0.31**		**22.1**	**0.6**		<10	BIS (2-CHLOROETHYL)-ETHER
BIS (2-CHLOROISO-PROPYL) ETHER	**0.0**	**10.0**	"					**170000**	**1400.0**		**267750.0**	**2205.0**		<10	BIS (2-CHLOROISO-PROPYL) ETHER
BIS (2-ETHYLHEXYL) PHTHALATE	**0.0**	**10.0**	**2.5**					**59.0**	**18.0**	**6.0**	**92.9**	**28.4**	**9.5**	5.0	BIS (2-ETHYLHEXYL) PHTHALATE
4-BROMOPHENYL PHENYL ETHER	**0.0**	**10.0**	"											<10	4-BROMOPHENYL PHENYL ETHER
BUTYL BENZYL PHTHALATE	**0.0**	**10.0**	"					**5200.0**	**3000.0**		**8190.0**	**4725.0**		<1	BUTYL BENZYL PHTHALATE
2-CHLORONAPHTHALENE	**0.0**	**10.0**	"					**4300.0**	**1700.0**		**6772.5**	**2677.5**		<1	2-CHLORONAPHTHALENE
4-CHLORPHENYL PHENYL ETHER	**0.0**	**10.0**	"											<10	4-CHLORPHENYL PHENYL ETHER
CHRYSENE	**0.0**	**10.0**	**2.5**					**0.49**	**0.044**		**0.8**	**0.1**		<1	CHRYSENE
DI-N-BUTYL PHTHALATE	**0.0**	**10.0**	**2.5**					**12000.0**	**2700.0**		**18900.0**	**4262.5**		<1	DI-N-BUTYL PHTHALATE
DI-N-OCTYL PHTHALATE	**0.0**	**10.0**	"											<1	DI-N-OCTYL PHTHALATE
DIBENZO(A,H) ANTHRACENE	**0.0**	**10.0**	"					**0.49**	**0.044**		**0.8**	**0.1**		<1	DIBENZO(A,H) ANTHRACENE
1,2-DICHLOROBENZENE	**0.0**	**1.0**	**2.0**					**17000.0**	**2700.0**		**26775.0**	**4252.5**		<1	1,2-DICHLOROBENZENE
1,3-DICHLOROBENZENE	**0.0**	**5.0**	**2.0**					**2600.0**	**400.0**		**4095.0**	**630.0**		<1	1,3-DICHLOROBENZENE
1,4-DICHLOROBENZENE	**0.0**	**5.0**	**2.0**					**2600.0**	**400.0**		**4095.0**	**630.0**		<1	1,4-DICHLOROBENZENE
3,3-DICHLOROBENZIDINE	**0.0**	**10.0**	"					**0.77**	**0.4**		**1.2**	**0.6**		<10	3,3-DICHLOROBENZIDINE
DIETHYL PHTHALATE	**0.0**	**10.0**	**1.9**					**120000**	**23000.0**		**189000.0**	**36225.0**		<1	DIETHYL PHTHALATE
DIMETHYL PHTHALATE	**0.0**	**10.0**	**1.6**					**2900000**	**313000.0**		**4567500.0**	**492975.0**		<1	DIMETHYL PHTHALATE
2,4-DINITROTOLUENE	**0.0**	**10.0**	**1.0**					**91.0**	**1.1**		**143.3**	**1.7**		<10	2,4-DINITROTOLUENE
2,6-DINITROTOLUENE	**0.0**	**10.0**	"											<10	2,6-DINITROTOLUENE
1,2 DIPHENYLHYDRAZINE	**0.0**	**10.0**	"					**5.4**	**0.4**		**8.5**	**0.6**		<10	1,2 DIPHENYLHYDRAZINE
FLUORANTHENE	**0.0**	**10.0**	**2.2**					**370.0**	**300.0**		**582.8**	**472.5**		<1	FLUORANTHENE
FLUORENE	**0.0**	**10.0**	**0.3**					**14000.0**	**1300.0**		**22050.0**	**2047.5**		<1	FLUORENE
HEXACHLOROBENZENE	**0.0**	**10.0**	**1.9**					**0.0077**	**0.0075**	**1.0**	**0.012**	**0.0**	**1.6**	<1	HEXACHLOROBENZENE
HEXACHLOROBUTADIENE	**0.0**	**10.0**	**5.0**					**500.0**	**4.4**		**787.5**	**6.9**		<10	HEXACHLOROBUTADIENE
HEXACHLOROCYCLO-PENTADIENE	**0.0**	**10.0**	"					**17000.0**	**240.0**	**5.0**	**26775.0**	**378.0**	**7.9**	<10	HEXACHLOROCYCLO-PENTADIENE
HEXACHLOROETHANE	**0.0**	**10.0**	**0.5**					**89.0**	**19.0**		**140.2**	**29.9**		<10	HEXACHLOROETHANE
INDENO(1,2,3-CD)PYRENE	**0.0**	**10.0**	"					**0.49**	**0.044**		**0.8**	**0.1**		<1	INDENO(1,2,3-CD)PYRENE
ISOPHORONE	**0.0**	**10.0**	"					**26000**	**360.0**		**40950.0**	**567.0**		<10	ISOPHORONE
NAPHTHALENE	**0.0**	**10.0**	"											<1	NAPHTHALENE
NITROBENZENE	**0.0**	**10.0**	**10.0**					**1900.0**	**17.0**		**2992.5**	**26.8**		<10	NITROBENZENE
N-NITROSODI-N-PROPYLAMINE	**0.0**	**10.0**	"					**1.4**	**0.005**		**2.2**	**0.0**		<10	N-NITROSODI-N-PROPYLAMINE
N-NITROSODI- METHYLAMINE	**0.0**	**10.0**	"					**81.0**	**0.0069**		**127.6**	**0.0**		<10	N-NITROSODI- METHYLAMINE
N-NITROSODI-PHENYLAMINE	**0.0**	**10.0**	"					**160.0**	**50.0**		**252.0**	**78.8**		<10	N-NITROSODI-PHENYLAMINE
PHENANTHRENE	**0.0**	**10.0**	**0.7**											<1	PHENANTHRENE
PYRENE	**0.0**	**10.0**	**0.3**					**11000.0**	**960.0**		**17325.0**	**1512.0**		<1	PYRENE
1,2,4-TRICHLOROBENZENE	**0.0**		"							**70.0**			**110.3**	<10	1,2,4-TRICHLOROBENZENE

a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. Reasonable potential does not exist for the following reason(s):
The required MDL has been used and resulted in non-detection (BDL) or the contributing industrial processes are NOT likely to contain them.

APPENDIX 5
Monitoring Frequency Reduction Analysis

	Conventional pollutants					Non-conventional pollutants		
	BOD5/S	BOD5/W	% Removal	TSS	% Removal	Ammonia/S	Ammonia/W	Settleable Solids
Effluent limits	7	12	85	30	85	0.9	2	1
SNC	9.8	16.8	61	42	61	1.26	2.4	1.2
Date								
08/31/2010	1.23		99.8	2.34	99.4	0.104		0
09/30/2010	2.88		99.5	3.83	99.1	0.096		0
10/31/2010	1.16		99.8	5.3	97.7	0.12		0
11/30/2010		0.725	99.9	1.03	99.6		0.16	0
12/31/2010		1	99.6	0.6	99.8		0.165	0
01/31/2011		1.3	99.5	1.4	99.1		0.122	0
02/28/2011		1.4	99.6	2.3	99.4		0.59	0
03/31/2011		0.9	99.6	2.3	98.7		0.2	0
04/30/2011		1.6	99.5	4.6	97		0.11	0
05/31/2011	1.2		99.8	3.3	98.8	0.108		0
06/30/2011	1.2		99.8	4.9	98.3	0.135		0
07/31/2011	2.7		99.6	5.3	98.4	0.123		0
08/31/2011	1		99.8	2.7	99.3	0.136		0
09/30/2011	1.6		99.5	2.1	99.7	0.083		0
10/31/2011	1.5		99.7	1.2	99.6	0.118		0
11/30/2011		1.6	99.5	2.3	98.9		0.13	0
12/31/2011		2.6	98.4	3.1	97.6		0.165	0
01/31/2012		2	99.3	1.5	99		0.16	0
02/29/2012		1.6	99.4	1.8	98.8		0.243	0
03/31/2012		2.2	99.2	2.9	97.9		0.336	0
04/30/2012		1.9	99.6	0.9	99.6		0.313	0
05/31/2012	1.7		99.6	1.1	99.5	0.37		0
06/30/2012	0.6		99.8	0.7	99.7	0.455		0
07/31/2012	0.9		99.7	1.5	99.5	0.256		0
Total	12.0	12.0	24.0	24.0	24.0	12.0	12.0	24.0
Average	1.5	1.6	99.6	2.5	98.9	0.18	0.22	0.0
Std dev	0.7	0.6	0.3	1.4	0.8	0.1	0.1	0.0
C.V.	0.5	0.4	0.0	0.6	0.0	0.7	0.6	NA
% Limit	21	13	3	8	7	19	11	0

DO, pH, Cl_2, and fecal coliform are not considered for a reduction in monitoring frequencies since the monitoring is imperative to protect Tennessee's fish and aquatic life and human health. Reductions for parameters that serve primarily as operational indicators of the treatment facility are considered.

For the two-year reporting period, there have been no violations of these parameters.
The monthly average concentrations of these parameters is less than 25% of the permit limits, so 1/week effluent monitoring is allowed.